Fraser Estuary Comparative Habitat Study: I. Beach Seine Catches, Water Characteristics, and Geomorphology March 1980 to July 1981

K. Conlin, B. Lawley, P. Futer, M. Kotyk, L. Jantz, B. Hillaby, R. Elvidge, B. Piercey, D. Gordon, C. Levings, K. Hutton, R. MacIndoe

Department of Fisheries and Oceans
Fisheries Research Branch
West Vancouver Laboratory
4160 Marine Drive
West Vancouver, British Columbia V7V 1N6

September 1982

Canadian Data Report of Fisheries and Aquatic Sciences No. 340

Canadian Data Report of Fisheries and Aquatic Sciences

These reports provide a medium for filing and archiving data compilations where little or no analysis is included. Such compilations commonly will have been prepared in support of other journal publications or reports. The subject matter of Data Reports reflects the broad interests and policies of the Department of Fisheries and Oceans, namely, fisheries management, technology and development, ocean sciences, and aquatic environments relevant to Canada.

Numbers 1-25 in this series were issued as Fisheries and Marine Service Data Records. Numbers 26-160 were issued as Department of Fisheries and the Environment, Fisheries and Marine Service Data Reports. The current series name was changed with report number 161.

Data Reports are not intended for general distribution and the contents must not be referred to in other publications without prior written clearance from the issuing establishment. The correct citation appears above the abstract of each report.

Rapport statistique canadien des sciences halieutiques et aquatiques

Ces rapports servent de base à la compilation des données de classement et d'archives pour lesquelles il y a peu ou point d'analyse. Cette compilation aura d'ordinaire été préparée pour appuyer d'autres publications ou rapports. Les sujets des Rapports statistiques reflètent la vaste gamme des intérêts et politiques du Ministère des Pêches et des Océans, notamment gestion des pêches, techniques et développement, sciences océaniques et environnements aquatiques, au Canada.

Les numéros 1 à 25 de cette série ont été publiés à titre de Records statistiques, Service des pêches et de la mer. Les numéros 26-160 ont été publiés à titre de Rapports statistiques du Service des pêches et de la mer, Ministère des Pêches et de l'Environnement. Le nom de la série a été modifié à partir du numéro 161.

Les Rapports statistiques ne sont pas préparés pour une vaste distribution et leur contenu ne doit pas être mentionné dans une publication sans autorisation écrite préalable de l'établissement auteur. Le titre exact paraît au haut du résumé de chaque rapport.

Canadian Data Report of Fisheries
and Aquatic Sciences No. 340

September 1982

FRASER ESTUARY COMPARATIVE HABITAT STUDY: I. BEACH SEINE CATCHES, WATER CHARACTERISTICS, AND GEOMORPHOLOGY MARCH 1980 TO JULY 1981

by

K. Conlin[2], B. Lawley[2], P. Futer[2], M. Kotyk[1], L. Jantz[2], B. Hillaby[2], R. Elvidge[2], B. Piercey[1], D. Gordon[1], C. Levings[1], K. Hutton[2], R. MacIndoe[2]

[1] Fisheries Research Branch
West Vancouver Laboratory
4160 Marine Drive, West Vancouver, B.C. V7V 1N6

[2] Department of Fisheries and Oceans
Habitat Management Division
1090 West Pender Street
Vancouver, B.C. V6E 2P1

(c) Minister of Supply and Services Canada 1982

Cat. No. Fs 97-13/340 ISSN 0706-6465

ABSTRACT

K. Conlin, B. Lawley;, P. Futer, M. Kotyk, L. Jantz, B. Hillaby, R. Elvidge, B. Piercey, D. Gordon, C. Levings, K. Hutton and R. MacIndoe. 1982. Fraser estuary comparative habitat study: I. Beach seine catches, water characteristics, and geomorphology March 1980 to July 1981. Can. Data Rep. Fish. Aquat. Sci. 340: iii + 125 p.

Data are given for beach seine catches and water characteristics from 3 low-tide refuges on Sturgeon and Roberts Bank, Fraser River estuary, sampled between March 1980 and July 1981. Two locations were in sandflats and the third was in an area characterized by eel grass beds. The bathymetry of 3 sites is described in detail. Approximately 25 fish taxa were obtained on Sturgeon Bank compared to 55 on Roberts Bank.

RÉSUMÉ

K. Conlin, B. Lawley, P. Futer, M. Kotyk, L. Jantz, B. Hillaby, R. Elvidge, B. Piercey, D. Gordon, C. Levings, K. Hutton, and R. MacIndoe. 1982. Fraser estuary comparative habitat study: I. Beach seine catches, water characteristics, and geomorphology March 1980 to July 1981. Can. Data Rep. Fish. Aquat. Sci. 340: iii + 125 p.

On fournit des données sur les prises effectuées au moyen de sennes de rivage et sur les caractéristiques de l'eau dans 3 refuges à marée basse situés sur les bancs Sturgeon et Roberts, dans l'estuaire du fleuve Fraser, où l'on a prélevé des échantillons entre mars 1980 et juillet 1981. Deux de ces emplacements se trouvaient dans des veys sableux, tandis que le troisième était situé dans une région caractérisée par des lits d'herbe à bernache. On décrit en détail la bathymétrie des 3 emplacements. Environ 25 taxons de poissons ont été identifiés sur le banc Sturgeon en comparaison de 55 sur le banc Roberts.

INTRODUCTION

In March 1980 sampling programmes were established to examine the fish use and comparative ecology of three contrasting environments on Sturgeon and Roberts Bank, Fraser River estuary. These studies were an extension of preliminary research in 1979, which showed significant catches of juvenile salmonids and other species at certain locations on the Banks (Greer et al. 1980).

The Banks are extremely difficult to work on because of their size (14000 ha) and exposure to the Strait of Georgia. Therefore 3 representative areas were chosen for detailed studies at low tide when a restricted body of water could be sampled. These were as follows: 1 - Roberts Bank pit, a dredge borrow area in eelgrass beds between the Tsawwassen ferry terminal causeway and the Westshore Terminal causeway; 2 - Steveston Pit, located in a relict river channel through a sandflat on southern Sturgeon Bank; 3 - Iona Pit, which is the seaward end of a man-made channel receiving domestic sewage discharged onto northern Sturgeon Bank (Figure 1).

The data presented herein provide information on the physical attributes of the study sites, specifically bathymetry, geological attributes, temperature, salinity and dissolved oxygen. A detailed listing of beach seine results is given.

FIELD TECHNIQUES

A 14.7 m beach seine was used for the sampling, with wings 4.9 m (1 cm stretched mesh), bunt 4.9 m (3 mm mesh), and depth 1.5 m. The seine was fitted with about 10 gillnet floats and a leadline. At stations with moderate or steep slopes boats were used to set the net, except in winter when sampling was in darkness. At other sites personnel wearing chest waders pulled the net off the beach and encircled the area to be sampled.

Salinity, temperature and dissolved oxygen measurements were made simultaneously with the fish collection. Usually a depth of approximately 25 cm was sampled. Salinity estimates were obtained by collecting duplicate 75 mL samples, then analysed using either an Autosal 8400 or an American Optical Refractometer. Temperatures were obtained using a hand-held thermometer. Dissolved Oxygen measurements were made by filling duplicate 300 mL BOD bottles and fixed with manganous sulphate and alkaline iodide solutions according to Strickland and Parsons (1972). These were then sent to the Environmental Protection Service Chemistry Laboratories in West Vancouver where the Winkler Method was used to determine the dissolved oxygen values.

Whenever possible, fish were identified in the field, counted and released alive. Some specimens were retained for length and weight

determinations (see Kotyk et al. 1982), as were fish that could not be identified without laboratory examination (e.g. sculpins). However, the focus of the study was on juvenile salmonids and counts should be considered most accurate for them and for larger individuals of other taxa. Dr. Alex Peden, B.C. Provincial Museum, Victoria, verified our identifications of many of the uncommon fish taken in the survey.

STATION LOCATIONS

The position of the study areas with respect to Roberts and Sturgeon Bank are shown in Figure 1. Within each general site, stations were selected according to beach slope, access to various tidal levels, and substrate. Table 1 provides a description of the stations and their elevation with respect to tidal datum.

The detailed bathymetry (Figures 2 to 4) of the study areas was determined by echo sounding surveys with vertical control for water level. This work was done by a contract to Northwest Hydrographic Surveys Ltd (Surrey, B.C.), under the supervision of Mr. Hugh Fraser. The data were obtained in mid March 1980. The original field sheets may be obtained from one of the authors (C.D. Levings).

RESULTS

Fish species diversity was highest on Roberts Bank where 55 identifiable taxa representing 8 major families were taken in 134 seines (Table 2). About the same number of taxa were taken at Steveston (25 taxa) as at Iona (27 taxa) but more hauls were taken at the latter location (111 vs 80 seines (Table 2).

The main body of the data report (Table 3), shows the catch data on the left hand side of each page and the corresponding environmental data on the right. The following abbreviations require explanation:

Abbreviation	
S	Station Number; ranges from 1 to 7 at Iona and Roberts Bank; 1 to 6 at Steveston.
H	Haul Number; indicates replicate hauls at given stations. Ranges from 1 to 7.
MIN. AFTER LOW	Indicates number of minutes after low water that a particular seine haul was made. If a - sign precedes the number, the sample was obtained the indicated number of minutes before low water.

ACKNOWLEDGMENTS

The field studies reported here were begun when the authors of this report and colleagues were in the same administative unit, namely the Habitat Protection Division of the Resource Services Branch. Three units were major participants, namely Water Use, Water Quality, and Research. In May 1980 the Water Use and Water Quality units were transferred to the Field Services Branch. However, the joint studies were able to continue, and we are grateful to the administrative assistance provided by F. Boyd, T. Bird, R. Bell-Irving, I. Birtwell, C. McAllister and M. Nassichuk in this regard. Laboratory identifications of the fish were performed with the assistance of G. Sandercock and D. Burt. Several of the mid-winter surveys were conducted with a Canadian Coast Guard hovercraft, kindly arranged with Transport Canada.

REFERENCES

Greer, G.L., Levings, C.D., Harbo, R., Hillaby, B., Brown, T., and J. Sibert. 1980. Distribution of fish species on Roberts and Sturgeon Bank recorded in seine and trawl surveys. Can. MS. Rep. Fish Aquat. Sci. 1596. 51 p.

Kotyk, M., G. Greer, B. Piercey, and D. Gordon. 1982. Fraser estuary comparative habitat study: II Length-weight relationships for 33 species, March 1980 to July 1981. Can. Data Rep. Fish. Aquat. Sci. (in prep).

LIST OF FIGURES

		Page
Figure 1.	Chart of Sturgeon and Roberts Bank, showing general location of Iona Pit (1), Steveston Pit (2), and Roberts Bank Pit (3).	117
Figure 2.	Chart showing detailed bathymetry of the Steveston Pit. Numbered dots indicate location of beach seine stations.	119
Figure 3.	Chart showing detailed bathymetry of the Iona Pit at the seaward end of the Iona Island Sewage Channel. Numbered dots indicate location of beach seine stations.	121
Figure 4.	Chart showing general location of the beach seine stations between the Westshore Terminal Causeway and Tsawwassen Ferry Causeway on Roberts Bank.	123
Figure 5.	Chart showing detailed bathymetry and beach seine stations around the Roberts Bank Borrow Pit.	125

Table 1. Description of beach seine stations on Sturgeon and Roberts Bank (see also Figures 2 to 4).

Station	Elevation	Description
		IONA
1	varied with tidal height ranged from 0.2 to 1.6 m.	90% sand - 10% mud; on north side of sewage channel; moderate slope
2	0.6 m	100% sand; on south side of sewage channel; very steep slope
3	0.3 m	100% sand; on a tidal creek separated by by a bar from the sewage channel; very gentle slope
4	0.2 m	50% sand - 50% mud; on north side of sewage channel; moderate slope
5	0.2 m	50% sand - 50% mud; on south side of sewage channel; moderate slope
6	0.2 m	20% sand - 80% mud; on north side of sewage channel; moderate slope
7	0.2 m	20% sand - 80% mud; on north side of sewage channel; moderate slope
		STEVESTON
1	0 m	90% sand - 10% mud; on north side of relict river channel; very gentle slope
2	0 m	90% sand - 10% mud; on north side of relict river channel; steep slope
3	0 m	100% sand; at northeast end of relict river channel; gentle slope
4	0 m	100% sand; very gentle slope; at east end of relict river channel
5	1 m	100% sand; very gentle slope; at east end of relict river channel
6	1 m	100% sand; moderate slope; on southwest sand bar

Table 1 (continued)

Station	Elevation	Description
		ROBERTS BANK
1	varied with tidal height ranged from 0.1 to 1.8 m	cobble from mid-tide upshore; sand and eelgrass downshore; moderate slope; man-made beach
2	varied with tidal height	sand with rip-rap near high water mark (causeway armour); gentle slope
3	0.2 m	on north side of borrow pit; eel grass present; gentle slope
4	0.4 m	on northeast side of borrow pit; sand; extensive eel grass beds about 10 m distant; very steep slope
5	0 m	on northeast side of borrow pit; sand; close to the mouth of a tidal channel; steep slope
6	0.2 m	on southwest side of borrow pit; sand; extensive eel grass beds about 5 m distant; very steep slope
7	varied with tidal height; ranged from 0.1 to 1.8 m	Tsawwassen causeway; cobble with eel grass, steep slope.

Table 2. Number of taxa of major groups taken at three study sites

Group	IONA (111 hauls)	STEVESTON (80 hauls)	ROBERTS BANK (134 hauls)
Cyprinids	2	2	0
Cottids	5	2	15
Flounders and dabs	3	4	9
Clupeids and osmerids	3	4	3
Salmonids	4	4	4
Pholids and Stichaeids	3	3	6
Others	7	6	18
Total	27	25	55

Table 3. Listing of beach seine catches from Iona (p. 10 to 39), Steveston (p. 40 to 65), and Roberts Bank (p. 66 to 115) pits.

IONA

SPECIES	S=1 H=1 80-03-21	S=1 H=2 80-03-21	S=1 H=3 80-03-21
HYPOMESUS PRETIOSUS PRETIOSU	5	23	1
LUMPENUS SAGITTA	0	1	0
CLEVELANDIA IOS	0	0	1
GASTEROSTEUS ACULEATUS	1	0	0
LEPTOCOTTUS ARMATUS	0	1	2
PLATICHTHYS STELLATUS	4	2	4
JUV SOLE	0	0	1

IONA

SPECIES	S=1 H=1 80-04-09	S=1 H=2 80-04-09	S=1 H=3 80-04-09
ONCORHYNCHUS GORBUSCHA	0	1	1
ONCORHYNCHUS KETA	0	1	4
GASTEROSTEUS ACULEATUS	0	1	1
ONCORHYNCHUS TSHAWYTSCHA	2	0	0
LEPTOCOTTUS ARMATUS	1	1	0
PLATICHTHYS STELLATUS	5	1	3

IONA

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-03-21	80-03-21	80-03-21
TIME(PST)	1515	1545	1530
MIN. AFTER LOW	5	35	20
SALINITY(O/OO)	22	22	22
TEMPERATURE(C)	10	10	10
DISSOLVED OXYGEN(MG/L)	9	9	9

IONA

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-04-09	80-04-09	80-04-09
TIME(PST)	1840	1852	1900
MIN. AFTER LOW	25	37	45
SALINITY(O/OO)	15	15	15
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	-	-	-

IONA

SPECIES	S=1 H=1 80-04-18	S=1 H=2 80-04-18	S=1 H=3 80-04-18
ONCORHYNCHUS GORBUSCHA	7	63	2
HYPOMESUS PRETIOSUS PRETIOSU	0	31	1
CYMATOGASTER AGGREGATA	0	0	1
CLEVELANDIA IOS	0	7	4
ONCORHYNCHUS KETA	1	54	5
GASTEROSTEUS ACULEATUS	3	6	5
PHOLIS LAETA	1	0	1
ONCORHYNCHUS TSHAWYTSCHA	2	5	1
SEBASTES SP.	0	1	0
PAROPHRYS VETULUS	0	3	1
LEPTOCOTTUS ARMATUS	1	1	1
PLATICHTHYS STELLATUS	16	16	15

IONA

SPECIES	S=1 H=1 80-04-30	S=1 H=2 80-04-30	S=1 H=3 80-04-30
CLUPEA HARENGUS PALLASI	0	0	1
HYPOMESUS PRETIOSUS PRETIOSU	1	0	0
CLEVELANDIA IOS	44	39	21
PHOLIS LAETA	1	1	1
PHOLIS ORNATA	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	0	1	0
LEPTOCOTTUS ARMATUS	5	3	4
PLATICHTHYS STELLATUS	8	16	4

IONA

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-04-18	80-04-18	80-04-18
TIME(PST)	1340	1410	1430
MIN. AFTER LOW	-15	15	35
SALINITY(O/OO)	11	11	11
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	3	3	3

IONA

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-04-30	80-04-30	80-04-30
TIME(PST)	1141	1210	1230
MIN. AFTER LOW	1	30	50
SALINITY(O/OO)	8	8	8
TEMPERATURE(C)	14	14	14
DISSOLVED OXYGEN(MG/L)	7	7	7

IONA

SPECIES	S=1 H=1 80-05-15	S=1 H=2 80-05-15	S=1 H=3 80-05-15
LUMPENUS SAGITTA	0	1	1
CLEVELANDIA IOS	139	164	85
ONCORHYNCHUS KETA	0	1	0
GASTEROSTEUS ACULEATUS	0	0	1
PHOLIS LAETA	1	0	2
ONCORHYNCHUS TSHAWYTSCHA	1	0	0
LEPTOCOTTUS ARMATUS	4	6	2
PLATICHTHYS STELLATUS	2	3	1
JUV SOLE	9	0	4
UNK SCULPIN	3	0	1

IONA

SPECIES	S=1 H=1 80-05-28	S=2 H=1 80-05-28	S=4 H=1 80-05-28
CLUPEA HARENGUS PALLASI	0	7	0
HYPOMESUS PRETIOSUS PRETIOSU	0	1	0
LUMPENUS SAGITTA	1	0	0
CLEVELANDIA IOS	21	0	20
ONCORHYNCHUS KETA	0	4	0
GASTEROSTEUS ACULEATUS	0	0	6
ONCORHYNCHUS TSHAWYTSCHA	0	157	0
LEPTOCOTTUS ARMATUS	9	0	10
PLATICHTHYS STELLATUS	12	0	10

IONA

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-05-15	80-05-15	80-05-15
TIME(PST)	1300	1310	1320
MIN. AFTER LOW	65	75	85
SALINITY(O/OO)	3	3	3
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	6	6	6

IONA

	S=1 H=1	S=2 H=1	S=4 H=1
DATE	80-05-28	80-05-28	80-05-28
TIME(PST)	1110	1045	1215
MIN. AFTER LOW	40	15	105
SALINITY(O/OO)	9	10	7
TEMPERATURE(C)	16	16	17
DISSOLVED OXYGEN(MG/L)	4	6	8

IONA

SPECIES	S=5 H=1 80-05-28	S=6 H=1 80-05-28	S=7 H=1 80-05-28
CLEVELANDIA IOS	22	9	27
GASTEROSTEUS ACULEATUS	0	1	0
LEPTOCOTTUS ARMATUS	0	1	5

IONA

SPECIES	S=1 H=1 80-06-11	S=1 H=1 80-06-26
CLUPEA HARENGUS PALLASI	1	7
CYMATOGASTER AGGREGATA	0	7
CLEVELANDIA IOS	4	1
GASTEROSTEUS ACULEATUS	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	2
LEPTOCOTTUS ARMATUS	0	10
PLATICHTHYS STELLATUS	1	40

IONA

SPECIES	S=2 H=1 80-06-26	S=3 H=1 80-06-26	S=4 H=1 80-06-26
CLUPEA HARENGUS PALLASI	12	0	0
CYMATOGASTER AGGREGATA	0	0	8
CLEVELANDIA IOS	0	24	5
CATOSTOMUS MACROCHEILUS	1	0	0
GASTEROSTEUS ACULEATUS	8	1	0
ONCORHYNCHUS TSHAWYTSCHA	14	0	0
LEPTOCOTTUS ARMATUS	0	5	5
PLATICHTHYS STELLATUS	0	94	21

IONA

	S=5 H=1	S=6 H=1	S=7 H=1
DATE	80-05-28	80-05-28	80-05-28
TIME(PST)	1125	1150	1140
MIN. AFTER LOW	55	80	70
SALINITY(O/OO)	8	8	8
TEMPERATURE(C)	16	18	18
DISSOLVED OXYGEN(MG/L)	5	5	5

IONA

	S=1 H=1	S=1 H=1
DATE	80-06-11	80-06-26
TIME(PST)	1000	1000
MIN. AFTER LOW	-10	-5
SALINITY(O/OO)	-	4
TEMPERATURE(C)	-	16
DISSOLVED OXYGEN(MG/L)	-	3

IONA

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	80-06-26	80-06-26	80-06-26
TIME(PST)	1025	1035	1200
MIN. AFTER LOW	20	30	115
SALINITY(O/OO)	5	6	5
TEMPERATURE(C)	17	17	18
DISSOLVED OXYGEN(MG/L)	5	-	4

IONA

SPECIES	S=5 H=1 80-06-26	S=6 H=1 80-06-26	S=7 H=1 80-06-26
CLUPEA HARENGUS PALLASI	1	2	10
MYLOCHEILUS CAURINUS	0	0	5
CYMATOGASTER AGGREGATA	75	0	75
CLEVELANDIA IOS	8	4	0
GASTEROSTEUS ACULEATUS	0	2	30
ONCORHYNCHUS TSHAWYTSCHA	6	0	8
LEPTOCOTTUS ARMATUS	38	4	4
PLATICHTHYS STELLATUS	15	8	50

IONA

SPECIES	S=1 H=1 80-07-09	S=2 H=1 80-07-09	S=4 H=1 80-07-09
CLUPEA HARENGUS PALLASI	0	400	0
HYPOMESUS PRETIOSUS PRETIOSU	0	1	0
CYMATOGASTER AGGREGATA	0	1	0
CLEVELANDIA IOS	9	0	1
LEPTOCOTTUS ARMATUS	4	7	0
PLATICHTHYS STELLATUS	5	15	1

IONA

SPECIES	S=5 H=1 80-07-09	S=6 H=1 80-07-09	S=1 H=1 80-07-30
CLUPEA HARENGUS PALLASI	0	0	20
HYPOMESUS PRETIOSUS PRETIOSU	1	0	0
AULORHYNCHUS FLAVIDUS	0	0	23
CYMATOGASTER AGGREGATA	1	0	0
CLEVELANDIA IOS	0	0	10
LEPTOCOTTUS ARMATUS	6	5	0
PLATICHTHYS STELLATUS	50	5	132

IONA

	S=5 H=1	S=6 H=1	S=7 H=1
DATE	80-06-26	80-06-26	80-06-26
TIME(PST)	1100	1130	1115
MIN. AFTER LOW	55	85	70
SALINITY(O/OO)	4	4	4
TEMPERATURE(C)	17	18	20
DISSOLVED OXYGEN(MG/L)	6	7	6

IONA

	S=1 H=1	S=2 H=1	S=4 H=1
DATE	80-07-09	80-07-09	80-07-09
TIME(PST)	1015	1030	1145
MIN. AFTER LOW	65	80	155
SALINITY(O/OO)	9	10	6
TEMPERATURE(C)	20	20	24
DISSOLVED OXYGEN(MG/L)	3	8	7

IONA

	S=5 H=1	S=6 H=1	S=1 H=1
DATE	80-07-09	80-07-09	80-07-30
TIME(PST)	1050	1115	1425
MIN. AFTER LOW	100	125	75
SALINITY(O/OO)	-	4	
TEMPERATURE(C)	21	22	23
DISSOLVED OXYGEN(MG/L)	11	6	6

IONA

SPECIES	S=2 H=1 80-07-30	S=3 H=1 80-07-30	S=4 H=1 80-07-30
CLUPEA HARENGUS PALLASI	58	0	31
CYMATOGASTER AGGREGATA	1	0	1
CLEVELANDIA IOS	6	3	14
GASTEROSTEUS ACULEATUS	8	3	68
SYNGNATHUS GRISEOLINEATUS	1	0	0
LEPTOCOTTUS ARMATUS	3	0	3
PLATICHTHYS STELLATUS	22	19	65

IONA

SPECIES	S=5 H=1 80-07-30	S=6 H=1 80-07-30	S=7 H=1 80-07-30
CLUPEA HARENGUS PALLASI	61	2	0
CYMATOGASTER AGGREGATA	35	0	27
CLEVELANDIA IOS	4	2	6
GASTEROSTEUS ACULEATUS	18	199	10
LEPTOCOTTUS ARMATUS	133	32	10
PLATICHTHYS STELLATUS	592	37	13

IONA

SPECIES	S=1 H=1 80-08-11	S=2 H=1 80-08-11	S=3 H=1 80-08-11
CLUPEA HARENGUS PALLASI	280	4	0
AULORHYNCHUS FLAVIDUS	13	0	0
CYMATOGASTER AGGREGATA	3	0	0
CLEVELANDIA IOS	2	18	70
GASTEROSTEUS ACULEATUS	0	35	5
ONCORHYNCHUS TSHAWYTSCHA	3	0	0
LEPTOCOTTUS ARMATUS	21	21	3
PLATICHTHYS STELLATUS	12	4	10

IONA

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	80-07-30	80-07-30	80-07-30
TIME(PST)	1405	1355	1305
MIN. AFTER LOW	55	45	-5
SALINITY(O/OO)		10	9
TEMPERATURE(C)	23	23	23
DISSOLVED OXYGEN(MG/L)	8	8	5

IONA

	S=5 H=1	S=6 H=1	S=7 H=1
DATE	80-07-30	80-07-30	80-07-30
TIME(PST)	1335	1205	1230
MIN. AFTER LOW	25	-65	-40
SALINITY(O/OO)	9	9	9
TEMPERATURE(C)	24	23	23
DISSOLVED OXYGEN(MG/L)	5	5	8

IONA

	S=1 H=1	S=2 H=1	S=3 H=1
DATE	80-08-11	80-08-11	80-08-11
TIME(PST)	1145	1120	1130
MIN. AFTER LOW	5	-20	-10
SALINITY(O/OO)	10	12	13
TEMPERATURE(C)	22	23	23
DISSOLVED OXYGEN(MG/L)	6	7	7

IONA

SPECIES	S=5 H=1 80-08-11	S=7 H=1 80-08-11	S=1 H=1 80-09-04
CLEVELANDIA IOS	10	0	9
GASTEROSTEUS ACULEATUS	15	35	3
ONCHORYNCHUS TSHAWYTSCHA	0	0	1
LEPTOCOTTUS ARMATUS	9	18	7
PLATYICHTHYS STELLATUS	7	3	10

IONA

SPECIES	S=2 H=1 80-09-04	S=3 H=1 80-09-04	S=4 H=1 80-09-04
CLUPEA HARENGUS PALLASI	7	4	12
CLEVELANDIA IOS	0	35	1
GASTEROSTEUS ACULEATUS	300	75	4
LEPTOCOTTUS ARMATUS	0	1	6
PLATYICHTHYS STELLATUS	4	4	32

IONA

SPECIES	S=5 H=1 80-09-04	S=7 H=1 80-09-04	S=1 H=1 80-09-25
CLUPEA HARENGUS PALLASI	6	0	9
CYMATOGASTER AGGREGATA	0	0	16
CLEVELANDIA IOS	2	2	0
GASTEROSTEUS ACULEATUS	0	3	50
ONCHORYNCHUS TSHAWYTSCHA	0	0	1
PAROPHRYS VETULUS	0	0	1
LEPTOCOTTUS ARMATUS	17	10	6
PLATYICHTHYS STELLATUS	23	9	11

IONA

	S=5 H=1	S=7 H=1	S=1 H=1
DATE	80-08-11	80-08-11	80-09-04
TIME(PST)	1105	1045	830
MIN. AFTER LOW	-25	-55	55
SALINITY(O/OO)	11	11	10
TEMPERATURE(C)	24	24	15
DISSOLVED OXYGEN(MG/L)	8	7	3

IONA

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	80-09-04	80-09-04	80-09-04
TIME(PST)	810	820	755
MIN. AFTER LOW	35	45	20
SALINITY(O/OO)	11	-	10
TEMPERATURE(C)	15	-	15
DISSOLVED OXYGEN(MG/L)	7	-	4

IONA

	S=5 H=1	S=7 H=1	S=1 H=1
DATE	80-09-04	80-09-04	80-09-25
TIME(PST)	736	725	1115
MIN. AFTER LOW	1	-10	-35
SALINITY(O/OO)	-	-	17
TEMPERATURE(C)	-	-	14
DISSOLVED OXYGEN(MG/L)	-	-	5

IONA

SPECIES	S=4 H=1 80-09-25	S=1 H=1 80-10-30	S=1 H=2 80-10-30
CYMATOGASTER AGGREGATA	28	0	0
CLEVELANDIA IOS	0	23	18
GASTEROSTEUS ACULEATUS	6	94	20
SYNGNATHUS GRISEOLINEATUS	0	1	0
ASEMICHTHYS TAYLORI	4	0	0
LEPTOCOTTUS ARMATUS	0	3	3
PLATICHTHYS STELLATUS	18	17	5

IONA

SPECIES	S=1 H=3 80-10-30	S=1 H=1 80-11-18	S=1 H=2 80-11-18
HYPOMESUS PRETIOSUS PRETIOSU	0	3	1
CLEVELANDIA IOS	6	0	0
GASTEROSTEUS ACULEATUS	125	5	8
LEPTOCOTTUS ARMATUS	2	5	0
PLATICHTHYS STELLATUS	12	0	1

IONA

SPECIES	S=2 H=1 80-11-18	S=2 H=2 80-11-18	S=1 H=1 80-12-11
HYPOMESUS PRETIOSUS PRETIOSU	0	4	0
GASTEROSTEUS ACULEATUS	10	60	4
PAROPHRYS VETULUS	1	0	0
LEPTOCOTTUS ARMATUS	3	0	5
PLATICHTHYS STELLATUS	1	2	25
JUV SOLE	2	0	0

IONA

	S=4 H=1	S=1 H=1	S=1 H=2
DATE	80-09-25	80-10-30	80-10-30
TIME(PST)	1130	300	310
MIN. AFTER LOW	-20	-55	-45
SALINITY(O/OO)	-	17	17
TEMPERATURE(C)	-	12	12
DISSOLVED OXYGEN(MG/L)	-	3	3

IONA

	S=1 H=3	S=1 H=1	S=1 H=2
DATE	80-10-30	80-11-18	80-11-18
TIME(PST)	320	840	830
MIN. AFTER LOW	-35	65	55
SALINITY(O/OO)	17	19	19
TEMPERATURE(C)	12	9	9
DISSOLVED OXYGEN(MG/L)	3	7	7

IONA

	S=2 H=1	S=2 H=2	S=1 H=1
DATE	80-11-18	80-11-18	80-12-11
TIME(PST)	730	740	30
MIN. AFTER LOW	-5	5	-55
SALINITY(O/OO)	-	-	17
TEMPERATURE(C)	-	-	8
DISSOLVED OXYGEN(MG/L)	-	-	8

IONA

SPECIES	S=2 H=1 80-12-11	S=4 H=1 80-12-11	S=5 H=1 80-12-11
AULORHYNCHUS FLAVIDUS	1	0	0
AMMODYTES HEXAPTERUS	0	1	0
GASTEROSTEUS ACULEATUS	1	0	3
ARTEDIUS LATERALIS	0	4	0
LEPTOCOTTUS ARMATUS	0	0	18
PLATICHTHYS STELLATUS	1	21	20

IONA

SPECIES	S=1 H=1 81-01-20	S=1 H=2 81-01-20	S=1 H=3 81-01-20
HYPOMESUS PRETIOSUS PRETIOSU	1	0	0
AULORHYNCHUS FLAVIDUS	0	1	0
CLEVELANDIA IOS	1	1	0
GASTEROSTEUS ACULEATUS	1	7	6
ENOPHRYS BISON	0	0	1
LEPTOCOTTUS ARMATUS	0	6	1
PLATICHTHYS STELLATUS	9	34	9

IONA

SPECIES	S=4 H=1 81-01-20	S=1 H=1 81-03-03	S=1 H=2 81-03-03
AMMODYTES HEXAPTERUS	0	1	0
LEPTOCOTTUS ARMATUS	0	1	0
PLATICHTHYS STELLATUS	1	14	15

IONA

	S=2 H=1	S=4 H=1	S=5 H=1
DATE	80-12-11	80-12-11	80-12-11
TIME(PST)	120	155	215
MIN. AFTER LOW	-5	30	50
SALINITY(O/OO)	16	9	16
TEMPERATURE(C)	8	9	7
DISSOLVED OXYGEN(MG/L)	7	6	7

IONA

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	81-01-20	81-01-20	81-01-20
TIME(PST)	2300	2310	2320
MIN. AFTER LOW	-35	-25	-15
SALINITY(O/OO)	14	14	14
TEMPERATURE(C)	8	8	8
DISSOLVED OXYGEN(MG/L)	7	7	7

IONA

	S=4 H=1	S=1 H=1	S=1 H=2
DATE	81-01-20	81-03-03	81-03-03
TIME(PST)	2330	2120	2131
MIN. AFTER LOW	-5	-10	1
SALINITY(O/OO)	3	16	16
TEMPERATURE(C)	12	9	9
DISSOLVED OXYGEN(MG/L)	2	8	8

IONA

SPECIES	S=1 H=3 81-03-03	S=4 H=1 81-03-03	S=4 H=2 81-03-03
CLEVELANDIA IOS	1	0	0
GASTEROSTEUS ACULEATUS	2	0	1
LEPTOCOTTUS ARMATUS	0	1	0
PLATICHTHYS STELLATUS	14	13	2

IONA

SPECIES	S=4 H=3 81-03-03	S=1 H=1 81-03-25	S=1 H=2 81-03-25
CLEVELANDIA IOS	0	1	0
ONCORHYNCHUS KETA	0	2	3
GASTEROSTEUS ACULEATUS	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	0	1	0
LEPTOCOTTUS ARMATUS	1	0	0
PLATICHTHYS STELLATUS	18	18	16

IONA

SPECIES	S=4 H=1 81-03-25	S=4 H=2 81-03-25	S=1 H=1 81-04-08
HYPOMESUS PRETIOSUS PRETIOSU	45	44	4
LUMPENUS SAGITTA	3	0	0
AMMODYTES HEXAPTERUS	0	0	1
ONCORHYNCHUS KETA	14	4	0
GASTEROSTEUS ACULEATUS	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	0	6	3
LEPTOCOTTUS ARMATUS	0	0	1
PLATICHTHYS STELLATUS	8	10	15

IONA

	S=1 H=3	S=4 H=1	S=4 H=2
DATE	81-03-03	81-03-03	81-03-03
TIME(PST)	2140	2215	2230
MIN. AFTER LOW	10	45	60
SALINITY(O/OO)	16	15	15
TEMPERATURE(C)	9	8	8
DISSOLVED OXYGEN(MG/L)	8	7	7

IONA

	S=4 H=3	S=1 H=1	S=1 H=2
DATE	81-03-03	81-03-25	81-03-25
TIME(PST)	2245	1440	1450
MIN. AFTER LOW	75	10	20
SALINITY(O/OO)	15	14	14
TEMPERATURE(C)	8	15	15
DISSOLVED OXYGEN(MG/L)	7	8	8

IONA

	S=4 H=1	S=4 H=2	S=1 H=1
DATE	81-03-25	81-03-25	81-04-08
TIME(PST)	1530	1540	1320
MIN. AFTER LOW	60	-70	-50
SALINITY(O/OO)	14	14	12
TEMPERATURE(C)			12
DISSOLVED OXYGEN(MG/L)	9	9	11

IONA

SPECIES	S=1 H=2 81-04-08	S=4 H=1 81-04-08	S=4 H=2 81-04-08
HYPOMESUS PRETIOSUS PRETIOSU	0	1	0
GASTEROSTEUS ACULEATUS	4	2	0
ONCORHYNCHUS TSHAWYTSCHA	5	2	1
LEPTOCOTTUS ARMATUS	0	0	1
PLATICHTHYS STELLATUS	18	9	12

IONA

SPECIES	S=1 H=1 81-04-23	S=1 H=2 81-04-23	S=4 H=1 81-04-23
HYPOMESUS PRETIOSUS PRETIOSU	10	0	0
LUMPENUS SAGITTA	4	3	11
CLEVELANDIA IOS	13	13	0
HEXAGRAMMOS DECOGRAMMUS	0	1	0
	0	0	25
MALLOTUS VILLOSUS	0	1	1
ONCORHYNCHUS TSHAWYTSCHA	1	1	0
LEPTOCOTTUS ARMATUS	1	0	3
PLATICHTHYS STELLATUS	11	8	11
UNK FLATFISH	1	0	0

IONA

	S=1 H=2	S=4 H=1	S=4 H=2
DATE	81-04-08	81-04-08	81-04-08
TIME(PST)	1325	1418	1420
MIN. AFTER LOW	-45	8	10
SALINITY(O/OO)	12	6	6
TEMPERATURE(C)	12	12	12
DISSOLVED OXYGEN(MG/L)	11	10	10

IONA

	S=1 H=1	S=1 H=2	S=4 H=1
DATE	81-04-23	81-04-23	81-04-23
TIME(PST)	1250	1305	1340
MIN. AFTER LOW	-60	-45	-10
SALINITY(O/OO)	15	15	13
TEMPERATURE(C)	14	14	15
DISSOLVED OXYGEN(MG/L)	10	10	8

IONA

SPECIES	S=4 H=2 81-04-23	S=1 H=1 81-05-07	S=2 H=1 81-05-07
HYPOMESUS PRETIOSUS PRETIOSU	0	4	2
LUMPENUS SAGITTA	3	7	9
CLEVELANDIA IOS	2	1	1
ONCORHYNCHUS KETA	2	1	1
MALLOTUS VILLOSUS	3	0	0
GASTEROSTEUS ACULEATUS	0	3	3
ONCORHYNCHUS KISUTCH	0	2	4
ONCORHYNCHUS TSHAWYTSCHA	0	3	10
LEPTOCOTTUS ARMATUS	0	1	0
PLATICHTHYS STELLATUS	10	8	1

IONA

SPECIES	S=4 H=1 81-05-07	S=5 H=1 81-05-07	S=1 H=1 81-05-19
HYPOMESUS PRETIOSUS PRETIOSU	1	13	0
LUMPENUS SAGITTA	2	1	0
CLEVELANDIA IOS	0	0	32
ONCORHYNCHUS KETA	1	1	0
GASTEROSTEUS ACULEATUS	1	2	1
ONCORHYNCHUS KISUTCH	1	2	0
ONCORHYNCHUS TSHAWYTSCHA	4	12	0
PAROPHRYS VETULUS	0	0	1
LEPTOCOTTUS ARMATUS	0	0	11
PLATICHTHYS STELLATUS	4	0	1

IONA

	S=4 H=2	S=1 H=1	S=2 H=1
DATE	81-04-23	81-05-07	81-05-07
TIME(PST)	1355	1300	1320
MIN. AFTER LOW	5	-50	-30
SALINITY(O/OO)	13	10	9
TEMPERATURE(C)	15	13	13
DISSOLVED OXYGEN(MG/L)	8	7	8

IONA

	S=4 H=1	S=5 H=1	S=1 H=1
DATE	81-05-07	81-05-07	81-0[illegible]-19
TIME(PST)	1330	1340	1045
MIN. AFTER LOW	-20	-10	-65
SALINITY(O/OO)	4	5	5
TEMPERATURE(C)	14	14	16
DISSOLVED OXYGEN(MG/L)	6	6	6

IONA

SPECIES	S=2 H=1 81-05-19	S=3 H=1 81-05-19	S=4 H=1 81-05-19
LUMPENUS SAGITTA	8	6	1
CLEVELANDIA IOS	2	10	36
MALLOTUS VILLOSUS	3	0	0
ONCORHYNCHUS TSHAWYTSCHA	22	0	0
LEPTOCOTTUS ARMATUS	3	0	5
PLATICHTHYS STELLATUS	0	1	9

IONA

SPECIES	S=5 H=1 81-05-19	S=1 H=1 81-06-03	S=2 H=1 81-06-03
CLUPEA HARENGUS PALLASI	0	3	17
HYPOMESUS PRETIOSUS PRETIOSU	1	0	0
CYMATOGASTER AGGREGATA	0	0	1
LUMPENUS SAGITTA	14	0	0
CLEVELANDIA IOS	8	7	0
CITHARICHTHYS SORDIDUS	0	0	1
ONCORHYNCHUS KETA	2	0	1
GASTEROSTEUS ACULEATUS	0	1	1
ONCORHYNCHUS KISUTCH	0	0	1
PHOLIS ORNATA	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	60	0	20
PAROPHRYS VETULUS	2	0	0
LEPTOCOTTUS ARMATUS	0	36	2
PLATICHTHYS STELLATUS	24	8	6

IONA

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	81-05-19	81-05-19	81-05-19
TIME(PST)	1100	1110	1130
MIN. AFTER LOW	-50	-40	-20
SALINITY(O/OO)	5	8	5
TEMPERATURE(C)	16	16	-
DISSOLVED OXYGEN(MG/L)	6	8	4

IONA

	S=5 H=1	S=1 H=1	S=2 H=1
DATE	81-05-19	81-06-03	81-06-03
TIME(PST)	1140	1110	1120
MIN. AFTER LOW	-10	-40	-30
SALINITY(O/OO)	5	9	6
TEMPERATURE(C)	-	16	17
DISSOLVED OXYGEN(MG/L)	8	5	6

IONA

SPECIES	S=4 H=1 81-06-03	S=5 H=1 81-06-03	S=1 H=1 81-06-18
CLUPEA HARENGUS PALLASI	0	9	0
MYLOCHEILUS CAURINUS	0	1	0
LUMPENUS SAGITTA	0	4	0
CLEVELANDIA IOS	5	0	0
GASTEROSTEUS ACULEATUS	2	97	0
ONCORHYNCHUS TSHAWYTSCHA	0	2	0
LEPTOCOTTUS ARMATUS	34	54	13
PLATICHTHYS STELLATUS	11	24	0
OLIGOCOTTUS MACULOSUS	1	0	0

IONA

SPECIES	S=2 H=1 81-06-18	S=3 H=1 81-06-18	S=4 H=1 81-06-18
CLUPEA HARENGUS PALLASI	0	0	1
CYMATOGASTER AGGREGATA	0	0	2
CLEVELANDIA IOS	0	13	6
LEPTOCOTTUS ARMATUS	1	6	30
PLATICHTHYS STELLATUS	0	1	0

IONA

SPECIES	S=4 H=2 81-06-18	S=5 H=1 81-06-18	S=5 H=2 81-06-18
CLUPEA HARENGUS PALLASI	0	24	65
CYMATOGASTER AGGREGATA	0	4	9
CLEVELANDIA IOS	9	2	3
ONCORHYNCHUS KETA	0	0	1
GASTEROSTEUS ACULEATUS	1	1	5
ONCORHYNCHUS TSHAWYTSCHA	0	19	19
LEPTOCOTTUS ARMATUS	73	103	111
PLATICHTHYS STELLATUS	2	5	4

IONA

	S=4 H=1	S=5 H=1	S=1 H=1
DATE	81-06-03	81-06-03	81-06-18
TIME(PST)	1145	1200	1000
MIN. AFTER LOW	-5	10	-110
SALINITY(O/OO)	2	6	5
TEMPERATURE(C)	17	17	14
DISSOLVED OXYGEN(MG/L)	3	7	4

IONA

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	81-06-18	81-06-18	81-06-18
TIME(PST)	1035	1050	1225
MIN. AFTER LOW	-75	-60	35
SALINITY(O/OO)	5	-	2
TEMPERATURE(C)	14	-	14
DISSOLVED OXYGEN(MG/L)	8	-	6

IONA

	S=4 H=2	S=5 H=1	S=5 H=2
DATE	81-06-18	81-06-18	81-06-18
TIME(PST)	1230	1130	1150
MIN. AFTER LOW	40	-20	0
SALINITY(O/OO)	2	4	4
TEMPERATURE(C)	14	13	13
DISSOLVED OXYGEN(MG/L)	6	9	9

IONA

SPECIES	S=1 H=1 81-07-02	S=2 H=1 81-07-02	S=4 H=1 81-07-02
CLUPEA HARENGUS PALLASI	0	315	0
CYMATOGASTER AGGREGATA	1	0	0
CLEVELANDIA IOS	8	0	8
CITHARICHTHYS SORDIDUS	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	0	5	0
LEPTOCOTTUS ARMATUS	17	14	11
PLATICHTHYS STELLATUS	0	19	9

IONA

SPECIES	S=5 H=1 81-07-02
CLUPEA HARENGUS PALLASI	12
CYMATOGASTER AGGREGATA	1024
CLEVELANDIA IOS	1
CITHARICHTHYS SORDIDUS	1
GASTEROSTEUS ACULEATUS	16
ONCORHYNCHUS TSHAWYTSCHA	6
LEPTOCOTTUS ARMATUS	120
PLATICHTHYS STELLATUS	99

IONA

	S=1 H=1	S=2 H=1	S=4 H=1
DATE	81-07-02	81-07-02	81-07-02
TIME(PST)	1125	1100	1145
MIN. AFTER LOW	-15	-40	5
SALINITY(O/OO)	8	9	9
TEMPERATURE(C)	18	19	20
DISSOLVED OXYGEN(MG/L)	4	7	5

IONA

	S=5 H=1
DATE	81-07-02
TIME(PST)	1140
MIN. AFTER LOW	0
SALINITY(O/OO)	8
TEMPERATURE(C)	20
DISSOLVED OXYGEN(MG/L)	5

STEVESTON

SPECIES	S=6 H=1 80-04-10	S=6 H=1 80-04-15	S=6 H=1 80-04-16
ONCORHYNCHUS GORBUSCHA	14	0	1
HYPOMESUS PRETIOSUS PRETIOSU	0	3	7
AMMODYTES HEXAPTERUS	0	0	2
ONCORHYNCHUS KETA	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	3	4
PLATICHTHYS STELLATUS	0	6	5
PSETTICHTHYS MELANOSTICUS	0	4	2
JUV SOLE	0	0	1

STEVESTON

SPECIES	S=6 H=2 80-04-15	S=6 H=2 80-04-16	S=6 H=3 80-04-15
ONCORHYNCHUS GORBUSCHA	0	4	1
HYPOMESUS PRETIOSUS PRETIOSU	4	14	1
AMMODYTES HEXAPTERUS	0	1	0
CLEVELANDIA IOS	1	1	1
ONCORHYNCHUS KETA	0	1	0
GASTEROSTEUS ACULEATUS	2	6	0
THALEICHTHYS PACIFICUS	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	3	17	0
LEPTOCOTTUS ARMATUS	0	1	0
PLATICHTHYS STELLATUS	3	0	3
PSETTICHTHYS MELANOSTICUS	4	0	1
JUV SOLE	0	0	2

STEVESTON

	S=6 H=1	S=6 H=1	S=6 H=1
DATE	80-04-10	80-04-15	80-04-16
TIME(PST)	1850	1200	1200
MIN. AFTER LOW	-40	30	-25
SALINITY(O/OO)	20	-	-
TEMPERATURE(C)	10	-	-
DISSOLVED OXYGEN(MG/L)	13	-	-

STEVESTON

	S=6 H=2	S=6 H=2	S=6 H=3
DATE	80-04-15	80-04-16	80-04-15
TIME(PST)	1215	1300	1225
MIN. AFTER LOW	45	35	55
SALINITY(O/OO)	-	-	-
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	-	-	-

STEVESTON

SPECIES	S=6 H=3 80-04-16	S=6 H=1 80-05-01	S=6 H=2 80-05-01
ONCORHYNCHUS GORBUSCHA	4	0	1
HYPOMESUS PRETIOSUS PRETIOSU	19	0	2
CLEVELANDIA IOS	0	4	3
ONCORHYNCHUS KETA	2	0	4
GASTEROSTEUS ACULEATUS	0	4	3
ISOPSETTA ISOLEPIS	0	0	2
ONCORHYNCHUS TSHAWYTSCHA	45	6	31
PLATICHTHYS STELLATUS	0	1	1

STEVESTON

SPECIES	S=6 H=3 80-05-01	S=6 H=4 80-05-01	S=3 H=1 80-05-14
ONCORHYNCHUS GORBUSCHA	0	1	0
HYPOMESUS PRETIOSUS PRETIOSU	6	2	0
CYMATOGASTER AGGREGATA	0	0	2
AMMODYTES HEXAPTERUS	0	1	0
CLEVELANDIA IOS	3	1	0
GASTEROSTEUS ACULEATUS	2	3	0
PHOLIS LAETA	0	0	1
ISOPSETTA ISOLEPIS	2	5	0
ONCORHYNCHUS TSHAWYTSCHA	9	6	400
LEPTOCOTTUS ARMATUS	1	1	1
PLATICHTHYS STELLATUS	3	3	1

STEVESTON

	S=6 H=3	S=6 H=1	S=6 H=2
DATE	80-04-16	80-05-01	80-05-01
TIME(PST)	1315	1300	1245
MIN. AFTER LOW	50	55	40
SALINITY(O/OO)	-	5	5
TEMPERATURE(C)	-	14	14
DISSOLVED OXYGEN(MG/L)	-	-	-

STEVESTON

	S=6 H=3	S=6 H=4	S=3 H=1
DATE	80-05-01	80-05-01	80-05-14
TIME(PST)	1200	1140	1150
MIN. AFTER LOW	-5	-25	40
SALINITY(O/OO)	5	5	11
TEMPERATURE(C)	14	14	16
DISSOLVED OXYGEN(MG/L)	-	-	10

STEVESTON

SPECIES	S=3 H=2 80-05-14	S=3 H=3 80-05-14	S=6 H=1 80-05-14
ONCORHYNCHUS GORBUSCHA	1	0	0
MYLOCHEILUS CAURINUS	0	1	0
AMMODYTES HEXAPTERUS	0	0	1
CLEVELANDIA IOS	0	4	0
GASTEROSTEUS ACULEATUS	9	0	3
ISOPSETTA ISOLEPIS	0	3	1
ONCORHYNCHUS TSHAWYTSCHA	49	49	21
PLATICHTHYS STELLATUS	4	8	0

STEVESTON

SPECIES	S=6 H=2 80-05-14	S=6 H=3 80-05-14	S=6 H=1 80-05-29
HYPOMESUS PRETIOSUS PRETIOSU	1	0	0
LUMPENUS SAGITTA	0	0	18
GASTEROSTEUS ACULEATUS	0	3	222
ISOPSETTA ISOLEPIS	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	19	45	46
LEPTOCOTTUS ARMATUS	0	0	1
PLATICHTHYS STELLATUS	1	0	0
UNK FLATFISH	0	0	1

STEVESTON

	S=3 H=2	S=3 H=3	S=6 H=1
DATE	80-05-14	80-05-14	80-05-14
TIME(PST)	1210	1130	1230
MIN. AFTER LOW	60	20	80
SALINITY(O/OO)	14	16	7
TEMPERATURE(C)	14	12	14
DISSOLVED OXYGEN(MG/L)	10	10	10

STEVESTON

	S=6 H=2	S=6 H=3	S=6 H=1
DATE	80-05-14	80-05-14	80-05-29
TIME(PST)	1235	1240	1115
MIN. AFTER LOW	85	90	10
SALINITY(O/OO)	7	7	6
TEMPERATURE(C)	14	14	13
DISSOLVED OXYGEN(MG/L)	10	10	11

STEVESTON

SPECIES	S=6 H=2 80-05-29	S=6 H=3 80-05-29	S=2 H=1 80-06-12
CLUPEA HARENGUS PALLASI	0	0	36
CYMATOGASTER AGGREGATA	0	1	2
LUMPENUS SAGITTA	4	2	0
AMMODYTES HEXAPTERUS	1	0	0
GASTEROSTEUS ACULEATUS	100	92	36
ONCORHYNCHUS TSHAWYTSCHA	6	5	16
PAROPHRYS VETULUS	3	4	0
PLATICHTHYS STELLATUS	0	0	2
UNK FLATFISH	1	0	0

STEVESTON

SPECIES	S=3 H=1 80-06-12	S=6 H=1 80-06-12	S=6 H=2 80-06-12
CLUPEA HARENGUS PALLASI	1	2	54
HYPOMESUS PRETIOSUS PRETIOSU	1	0	2
MYLOCHEILUS CAURINUS	1	0	0
CYMATOGASTER AGGREGATA	2	4	13
LUMPENUS SAGITTA	1	0	0
SEBASTES SP.	0	1	0
GASTEROSTEUS ACULEATUS	2	31	1
ONCORHYNCHUS TSHAWYTSCHA	2	11	13
PAROPHRYS VETULUS	0	0	2
LEPTOCOTTUS ARMATUS	6	9	3
PLATICHTHYS STELLATUS	1	0	3
PSETTICHTHYS MELANOSTICUS	0	0	2

STEVESTON

	S=6 H=2	S=6 H=3	S=2 H=1
DATE	80-05-29	80-05-29	80-06-12
TIME(PST)	1140	1153	1210
MIN. AFTER LOW	35	55	80
SALINITY(O/OO)	6	6	5
TEMPERATURE(C)	13	13	22
DISSOLVED OXYGEN(MG/L)	11	11	10

STEVESTON

	S=3 H=1	S=6 H=1	S=6 H=2
DATE	80-06-12	80-06-12	80-06-12
TIME(PST)	1230	1305	1330
MIN. AFTER LOW	100	135	160
SALINITY(O/OO)	6	5	5
TEMPERATURE(C)	22	20	20
DISSOLVED OXYGEN(MG/L)	10	10	10

STEVESTON

SPECIES	S=2 H=1 80-06-27	S=4 H=1 80-06-27	S=6 H=1 80-06-27
CLUPEA HARENGUS PALLASI	0	0	14
CYMATOGASTER AGGREGATA	26	0	3
LUMPENUS SAGITTA	0	0	69
CLEVELANDIA IOS	4	1	0
GASTEROSTEUS ACULEATUS	1	0	2
SYNGNATHUS GRISEOLINEATUS	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	2	0	12
PAROPHRYS VETULUS	0	0	3
LEPTOCOTTUS ARMATUS	7	5	3
PLATICHTHYS STELLATUS	54	34	60
JUV SOLE	0	0	8

STEVESTON

SPECIES	S=6 H=2 80-06-27	S=6 H=3 80-06-27	S=6 H=4 80-06-27
CLUPEA HARENGUS PALLASI	10	7	1
CYMATOGASTER AGGREGATA	13	3	0
LUMPENUS SAGITTA	8	40	35
CLEVELANDIA IOS	2	0	1
GASTEROSTEUS ACULEATUS	3	30	18
ONCORHYNCHUS TSHAWYTSCHA	4	13	3
PAROPHRYS VETULUS	0	0	1
LEPTOCOTTUS ARMATUS	1	6	3
PLATICHTHYS STELLATUS	9	25	38
PSETTICHTHYS MELANOSTICUS	1	0	0

STEVESTON

	S=2 H=1	S=4 H=1	S=6 H=1
DATE	80-06-27	80-06-27	80-06-27
TIME(PST)	1130	1140	1210
MIN. AFTER LOW	40	50	80
SALINITY(O/OO)	5	5	3
TEMPERATURE(C)	16	18	16
DISSOLVED OXYGEN(MG/L)	8	9	15

STEVESTON

	S=6 H=2	S=6 H=3	S=6 H=4
DATE	80-06-27	80-06-27	80-06-27
TIME(PST)	1230	1200	1220
MIN. AFTER LOW	100	70	90
SALINITY(O/OO)	3	3	3
TEMPERATURE(C)	16	16	16
DISSOLVED OXYGEN(MG/L)	15	15	15

STEVESTON

SPECIES	S=3 H=1 80-07-11	S=5 H=1 80-07-11	S=5 H=2 80-07-11
CLUPEA HARENGUS PALLASI	59	22	2
HYPOMESUS PRETIOSUS PRETIOSU	0	50	100
MYLOCHEILUS CAURINUS	0	1	0
CYMATOGASTER AGGREGATA	11	4	4
APODICHTHYS FLAVIDUS	1	0	0
AMMODYTES HEXAPTERUS	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	5	1	2
PAROPHRYS VETULUS	2	3	1
LEPTOCOTTUS ARMATUS	15	6	13
PLATICHTHYS STELLATUS	76	21	46
PSETTICHTHYS MELANOSTICUS	2	0	0

STEVESTON

SPECIES	S=6 H=1 80-07-11	S=6 H=2 80-07-11	S=1 H=1 80-08-09
CLUPEA HARENGUS PALLASI	0	1	100
HYPOMESUS PRETIOSUS PRETIOSU	0	10	0
CYMATOGASTER AGGREGATA	1	0	4
AMMODYTES HEXAPTERUS	1	0	0
GASTEROSTEUS ACULEATUS	0	0	1500
ONCORHYNCHUS TSHAWYTSCHA	3	2	13
PAROPHRYS VETULUS	0	0	1
LEPTOCOTTUS ARMATUS	4	0	0
PLATICHTHYS STELLATUS	8	9	13

STEVESTON

	S=3 H=1	S=5 H=1	S=5 H=2
DATE	80-07-11	80-07-11	80-07-11
TIME(PST)	1045	1015	1030
MIN. AFTER LOW	10	-20	-5
SALINITY(O/OO)	10	10	10
TEMPERATURE(C)	16	16	16
DISSOLVED OXYGEN(MG/L)	12	9	9

STEVESTON

	S=6 H=1	S=6 H=2	S=1 H=1
DATE	80-07-11	80-07-11	80-08-09
TIME(PST)	950	1000	1040
MIN. AFTER LOW	-45	-35	15
SALINITY(O/OO)	10	10	-
TEMPERATURE(C)	16	16	-
DISSOLVED OXYGEN(MG/L)	9	9	-

STEVESTON

SPECIES	S=2 H=1 80-08-09	S=4 H=1 80-08-09	S=5 H=1 80-08-09
CLUPEA HARENGUS PALLASI	500	0	10
CYMATOGASTER AGGREGATA	2	4	4
CLEVELANDIA IOS	1	1	0
GASTEROSTEUS ACULEATUS	300	25	3
SYNGNATHUS GRISEOLINEATUS	4	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	1	11
LEPTOCOTTUS ARMATUS	12	3	11
PLATICHTHYS STELLATUS	32	28	2
PSETTICHTHYS MELANOSTICUS	1	4	0

STEVESTON

SPECIES	S=6 H=1 80-08-09	S=6 H=1 80-09-23	S=6 H=2 80-09-23
CLUPEA HARENGUS PALLASI	8	0	0
HYPOMESUS PRETIOSUS PRETIOSU	0	0	10
CYMATOGASTER AGGREGATA	8	0	1
AMMODYTES HEXAPTERUS	0	22	0
CLEVELANDIA IOS	0	4	8
GASTEROSTEUS ACULEATUS	3	2	1
SYNGNATHUS GRISEOLINEATUS	2	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	0	1
PAROPHRYS VETULUS	0	4	1
LEPTOCOTTUS ARMATUS	1	1	2
PLATICHTHYS STELLATUS	11	17	17
PSETTICHTHYS MELANOSTICUS	5	0	2

STEVESTON

	S=2 H=1	S=4 H=1	S=5 H=1
DATE	80-08-09	80-08-09	80-08-09
TIME(PST)	1055	1005	920
MIN. AFTER LOW	30	-20	-65
SALINITY(O/OO)	-	-	-
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	-	-	-

STEVESTON

	S=6 H=1	S=6 H=1	S=6 H=2
DATE	80-08-09	80-09-23	80-09-23
TIME(PST)	1025	1005	1015
MIN. AFTER LOW	1	-5	5
SALINITY(O/OO)	12	8	8
TEMPERATURE(C)	22	14	14
DISSOLVED OXYGEN(MG/L)	9	9	9

STEVESTON

SPECIES	S=6 H=3 80-09-23	S=6 H=1 80-10-29	S=6 H=2 80-10-29
HYPOMESUS PRETIOSUS PRETIOSU	9	31	1
CYMATOGASTER AGGREGATA	0	0	1
AMMODYTES HEXAPTERUS	1	0	0
CLEVELANDIA IOS	0	2	3
GASTEROSTEUS ACULEATUS	1	0	3
PAROPHRYS VETULUS	2	5	6
LEPTOCOTTUS ARMATUS	0	11	13
PLATICHTHYS STELLATUS	3	27	12

STEVESTON

SPECIES	S=6 H=3 80-10-29	S=6 H=1 80-12-10	S=6 H=2 80-12-10
HYPOMESUS PRETIOSUS PRETIOSU	1	0	1
CLEVELANDIA IOS	1	0	0
GASTEROSTEUS ACULEATUS	0	0	2
PAROPHRYS VETULUS	1	0	0
PLATICHTHYS STELLATUS	10	6	8

STEVESTON

SPECIES	S=6 H=3 80-12-10	S=5 H=1 81-01-19	S=5 H=2 81-01-19
HYPOMESUS PRETIOSUS PRETIOSU	4	2	2
CLEVELANDIA IOS	0	1	0
GASTEROSTEUS ACULEATUS	0	2	0
PLATICHTHYS STELLATUS	6	0	9
PSETTICHTHYS MELANOSTICUS	0	0	1

STEVESTON

	S=6 H=3	S=6 H=1	S=6 H=2
DATE	80-09-23	80-10-29	80-10-29
TIME(PST)	950	100	110
MIN. AFTER LOW	-20	-125	-115
SALINITY(O/OO)	8	15	15
TEMPERATURE(C)	14	10	10
DISSOLVED OXYGEN(MG/L)	9	9	9

STEVESTON

	S=6 H=3	S=6 H=1	S=6 H=2
DATE	80-10-29	80-12-10	80-12-10
TIME(PST)	120	25	1
MIN. AFTER LOW	-105	-20	-44
SALINITY(O/OO)	15	19	19
TEMPERATURE(C)	10	5	5
DISSOLVED OXYGEN(MG/L)	9	10	10

STEVESTON

	S=6 H=3	S=5 H=1	S=5 H=2
DATE	80-12-10	81-01-19	81-01-19
TIME(PST)	10	2330	2340
MIN. AFTER LOW	-35	35	45
SALINITY(O/OO)	19	-	-
TEMPERATURE(C)	5	-	-
DISSOLVED OXYGEN(MG/L)	10	-	-

STEVESTON

SPECIES	S=6 H=1 81-01-19	S=6 H=1 81-02-17	S=6 H=1 81-03-04
AULORHYNCHUS FLAVIDUS	0	1	0
AMMODYTES HEXAPTERUS	0	0	1
ONCORHYNCHUS KETA	0	0	2
MALLOTUS VILLOSUS	1	0	0
GASTEROSTEUS ACULEATUS	0	1	1
PAROPHRYS VETULUS	1	0	0
LEPTOCOTTUS ARMATUS	2	0	0
PLATICHTHYS STELLATUS	9	8	17
PSETTICHTHYS MELANOSTICUS	2	0	2

STEVESTON

SPECIES	S=6 H=2 81-03-04	S=6 H=3 81-03-04	S=1 H=1 81-05-05
HYPOMESUS PRETIOSUS PRETIOSU	0	0	15
AMMODYTES HEXAPTERUS	1	3	150
ONCORHYNCHUS KETA	0	1	1
MALLOTUS VILLOSUS	1	1	0
GASTEROSTEUS ACULEATUS	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	0	0	18
PAROPHRYS VETULUS	0	3	2
LEPTOCOTTUS ARMATUS	2	1	0
PLATICHTHYS STELLATUS	24	32	3
PSETTICHTHYS MELANOSTICUS	2	1	0

STEVESTON

	S=6 H=1	S=6 H=1	S=6 H=1
DATE	81-01-19	81-02-17	81-03-04
TIME(PST)	2350	2245	2145
MIN. AFTER LOW	55	-1	-40
SALINITY(O/OO)	12	10	11
TEMPERATURE(C)	-	6	7
DISSOLVED OXYGEN(MG/L)	11	10	11

STEVESTON

	S=6 H=2	S=6 H=3	S=1 H=1
DATE	81-03-04	81-03-04	81-05-05
TIME(PST)	2158	2210	1300
MIN. AFTER LOW	-27	-15	50
SALINITY(O/OO)	11	11	12
TEMPERATURE(C)	7	7	17
DISSOLVED OXYGEN(MG/L)	11	11	12

STEVESTON

SPECIES	S=2 H=1 81-05-05	S=3 H=1 81-05-05	S=6 H=1 81-05-05
HYPOMESUS PRETIOSUS PRETIOSU	8	12	0
CYMATOGASTER AGGREGATA	0	1	0
LUMPENUS SAGITTA	1	0	2
AMMODYTES HEXAPTERUS	100	0	0
CLEVELANDIA IOS	0	0	1
GASTEROSTEUS ACULEATUS	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	182	16	106
PLATICHTHYS STELLATUS	0	1	8

STEVESTON

SPECIES	S=6 H=2 81-05-05	S=6 H=3 81-05-05	S=6 H=1 81-05-21
CLUPEA HARENGUS PALLASI	0	0	1
HYPOMESUS PRETIOSUS PRETIOSU	33	0	0
LUMPENUS SAGITTA	1	0	4
AMMODYTES HEXAPTERUS	0	0	1
CLEVELANDIA IOS	1	1	3
MALLOTUS VILLOSUS	0	0	114
GASTEROSTEUS ACULEATUS	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	44	24	2
PAROPHRYS VETULUS	0	0	4
PLATICHTHYS STELLATUS	0	1	0
PSETTICHTHYS MELANOSTICUS	1	0	2

STEVESTON

	S=2 H=1	S=3 H=1	S=6 H=1
DATE	81-05-05	81-05-05	81-05-05
TIME(PST)	1320	1330	1245
MIN. AFTER LOW	70	80	35
SALINITY(O/OO)	10	11	9
TEMPERATURE(C)	17	16	15
DISSOLVED OXYGEN(MG/L)	12	12	12

STEVESTON

	S=6 H=2	S=6 H=3	S=6 H=1
DATE	81-05-05	81-05-05	81-05-21
TIME(PST)	1255	1305	1210
MIN. AFTER LOW	45	55	-45
SALINITY(O/OO)	9	9	7
TEMPERATURE(C)	15	15	14
DISSOLVED OXYGEN(MG/L)	12	12	10

STEVESTON

SPECIES	S=6 H=2 81-05-21	S=6 H=3 81-05-21	S=1 H=1 81-06-02
CLUPEA HARENGUS PALLASI	0	0	20
CYMATOGASTER AGGREGATA	0	0	1
LUMPENUS SAGITTA	9	9	5
APODICHTHYS FLAVIDUS	0	0	1
AMMODYTES HEXAPTERUS	1	0	0
CLEVELANDIA IOS	2	1	2
ONCORHYNCHUS KETA	1	0	0
MALLOTUS VILLOSUS	7	1	0
GASTEROSTEUS ACULEATUS	0	1	7
ONCORHYNCHUS TSHAWYTSCHA	11	7	20
PAROPHRYS VETULUS	3	1	3
LEPTOCOTTUS ARMATUS	0	0	5
PLATICHTHYS STELLATUS	3	4	33
PSETTICHTHYS MELANOSTICUS	0	2	0

STEVESTON

SPECIES	S=2 H=1 81-06-02	S=3 H=1 81-06-02	S=4 H=1 81-06-02
CLUPEA HARENGUS PALLASI	2	6	4
MYLOCHEILUS CAURINUS	1	0	0
CYMATOGASTER AGGREGATA	5	5	7
LUMPENUS SAGITTA	4	7	4
CLEVELANDIA IOS	4	0	2
ONCORHYNCHUS KETA	1	0	0
GASTEROSTEUS ACULEATUS	14	50	20
PHOLIS LAETA	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	42	36	16
LEPTOCOTTUS ARMATUS	5	13	20
PLATICHTHYS STELLATUS	13	52	102

STEVESTON

	S=6 H=2	S=6 H=3	S=1 H=1
DATE	81-05-21	81-05-21	81-06-02
TIME(PST)	1220	1230	1030
MIN. AFTER LOW	-35	-25	-35
SALINITY(O/OO)	7	7	3
TEMPERATURE(C)	14	14	18
DISSOLVED OXYGEN(MG/L)	10	10	9

STEVESTON

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	81-06-02	81-06-02	81-06-02
TIME(PST)	1045	1100	1115
MIN. AFTER LOW	-20	-5	10
SALINITY(O/OO)	3	3	3
TEMPERATURE(C)	17	17	18
DISSOLVED OXYGEN(MG/L)	9	9	9

STEVESTON

SPECIES	S=5 H=1 81-06-02	S=6 H=1 81-06-02	S=2 H=1 81-06-17
CLUPEA HARENGUS PALLASI	8	19	2
MYLOCHEILUS CAURINUS	2	3	0
CYMATOGASTER AGGREGATA	2	0	4
LUMPENUS SAGITTA	11	3	4
AMMODYTES HEXAPTERUS	0	1	0
ONCORHYNCHUS KETA	1	1	0
MALLOTUS VILLOSUS	8	4	0
GASTEROSTEUS ACULEATUS	25	15	1
ONCORHYNCHUS KISUTCH	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	17	8	14
PAROPHRYS VETULUS	1	0	4
LEPTOCOTTUS ARMATUS	2	2	4
PLATICHTHYS STELLATUS	0	2	25
PSETTICHTHYS MELANOSTICUS	0	0	2

STEVESTON

SPECIES	S=3 H=1 81-06-17	S=6 H=1 81-06-17	S=6 H=2 81-06-17
CLUPEA HARENGUS PALLASI	7	0	0
HYPOMESUS PRETIOSUS PRETIOSU	0	1	0
MYLOCHEILUS CAURINUS	3	0	0
CYMATOGASTER AGGREGATA	32	0	0
LUMPENUS SAGITTA	19	2	0
AMMODYTES HEXAPTERUS	0	1	0
MALLOTUS VILLOSUS	0	0	1
GASTEROSTEUS ACULEATUS	688	0	0
CLUPEA HARENGUS PALLASI(JUV)	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	38	8	7
PAROPHRYS VETULUS	0	2	3
LEPTOCOTTUS ARMATUS	33	3	4
PLATICHTHYS STELLATUS	36	0	0
OLIGOCOTTUS MACULOSUS	0	0	1
PSETTICHTHYS MELANOSTICUS	0	3	0

STEVESTON

	S=5 H=1	S=6 H=1	S=2 H=1
DATE	81-06-02	81-06-02	81-06-17
TIME(PST)	1140	1000	1130
MIN. AFTER LOW	35	-65	5
SALINITY(O/OO)	2	2	4
TEMPERATURE(C)	17	14	17
DISSOLVED OXYGEN(MG/L)	11	10	11

STEVESTON

	S=3 H=1	S=6 H=1	S=6 H=2
DATE	81-06-17	81-06-17	81-06-17
TIME(PST)	1200	1015	1025
MIN. AFTER LOW	35	-70	-60
SALINITY(O/OO)	6	2	2
TEMPERATURE(C)	16	15	15
DISSOLVED OXYGEN(MG/L)	10	8	8

STEVESTON

SPECIES	S=6 H=3 81-06-17	S=2 H=1 81-06-30	S=3 H=1 81-06-30
CLUPEA HARENGUS PALLASI	1	1	0
CYMATOGASTER AGGREGATA	0	596	1716
LUMPENUS SAGITTA	2	18	5
CLEVELANDIA IOS	1	0	0
MALLOTUS VILLOSUS	7	0	0
GASTEROSTEUS ACULEATUS	0	3	12
CLUPEA HARENGUS PALLASI(JUV)	0	11	0
HYBOGNATHUS HANKINSONI	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	11	0	0
PAROPHRYS VETULUS	7	7	1
LEPTOCOTTUS ARMATUS	1	5	2
PLATICHTHYS STELLATUS	0	18	18
PSETTICHTHYS MELANOSTICUS	3	0	0

STEVESTON

SPECIES	S=4 H=1 81-06-30	S=6 H=1 81-06-30
CLUPEA HARENGUS PALLASI	7	0
HYPOMESUS PRETIOSUS PRETIOSU	0	1
CYMATOGASTER AGGREGATA	294	8
LUMPENUS SAGITTA	17	3
GASTEROSTEUS ACULEATUS	14	0
PHOLIS LAETA	0	1
CLUPEA HARENGUS PALLASI(JUV)	0	6
ONCORHYNCHUS TSHAWYTSCHA	0	4
PAROPHRYS VETULUS	5	9
LEPTOCOTTUS ARMATUS	15	10
PLATICHTHYS STELLATUS	23	2
UNK FLATFISH	3	0

STEVESTON

	S=6 H=3	S=2 H=1	S=3 H=1
DATE	81-06-17	81-06-30	81-06-30
TIME(PST)	1035	1005	1045
MIN. AFTER LOW	-50	-10	30
SALINITY(O/OO)	2	8	10
TEMPERATURE(C)	15		17
DISSOLVED OXYGEN(MG/L)	8	9	9

STEVESTON

	S=4 H=1	S=6 H=1
DATE	81-06-30	81-06-30
TIME(PST)	1110	930
MIN. AFTER LOW	55	-45
SALINITY(O/OO)	9	6
TEMPERATURE(C)	17	15
DISSOLVED OXYGEN(MG/L)	10	10

ROBERTS BANK

SPECIES	S=1 H=1 80-03-20	S=1 H=2 80-03-20	S=1 H=3 80-03-20
MALLOTUS VILLOSUS	0	16	0
GASTEROSTEUS ACULEATUS	3	0	1
SYNGNATHUS GRISEOLINEATUS	1	2	0
PAROPHRYS VETULUS	2	7	9
LEPTOCOTTUS ARMATUS	0	0	1

ROBERTS BANK

SPECIES	S=1 H=1 80-04-11	S=1 H=2 80-04-11	S=1 H=3 80-04-11
HYPOMESUS PRETIOSUS PRETIOSU	12	0	0
AMMODYTES HEXAPTERUS	0	1	9
ONCORHYNCHUS KETA	0	3	0
GASTEROSTEUS ACULEATUS	3	0	1
PHOLIS LAETA	0	0	1
SYNGNATHUS GRISEOLINEATUS	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	0	0	1
PAROPHRYS VETULUS	0	17	6
PLATICHTHYS STELLATUS	1	2	0

ROBERTS BANK

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-03-20	80-03-20	80-03-20
TIME(PST)	1400	1435	1500
MIN. AFTER LOW	-25	10	35
SALINITY(O/OO)	28	28	28
TEMPERATURE(C)	10	10	10
DISSOLVED OXYGEN(MG/L)	11	11	11

ROBERTS BANK

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-04-11	80-04-11	80-04-11
TIME(PST)	1900	1910	1925
MIN. AFTER LOW	-90	-80	-65
SALINITY(O/OO)	28	28	28
TEMPERATURE(C)	10	10	10
DISSOLVED OXYGEN(MG/L)	-	-	-

ROBERTS BANK

SPECIES	S=1 H=1 80-04-17	S=1 H=2 80-04-17	S=1 H=3 80-04-17
HYPOMESUS PRETIOSUS PRETIOSU	4	0	4
AULORHYNCHUS FLAVIDUS	0	4	0
APODICHTHYS FLAVIDUS	1	10	12
UNK LARVA	0	0	1
ONCORHYNCHUS KETA	0	3	0
GASTEROSTEUS ACULEATUS	2	0	6
SEBASTES SP	1	0	2
UNK LIPARID	0	1	1
SYNGNATHUS GRISEOLINEATUS	1	2	2
ENOPHRYS BISON	8	21	10
PAROPHRYS VETULUS	3	4	21
PLATICHTHYS STELLATUS	0	1	0
PLEURONICHTHYS COENOSUS	0	0	1
UNK FLATFISH	0	27	22
UNK SCULPIN	0	1	0

ROBERTS BANK

SPECIES	S=1 H=1 80-05-01	S=1 H=2 80-05-01	S=1 H=3 80-05-01
ONCORHYNCHUS GORBUSCHA	6	9	3
HYPOMESUS PRETIOSUS PRETIOSU	5	2	0
CYMATOGASTER AGGREGATA	1	0	0
APODICHTHYS FLAVIDUS	3	0	0
AMMODYTES HEXAPTERUS	3500	3000	3000
HEXAGRAMMOS DECOGRAMMUS	0	0	2
ONCORHYNCHUS KETA	1	2	2
GASTEROSTEUS ACULEATUS	1	2	2
PHOLIS LAETA	0	0	1
SYNGNATHUS GRISEOLINEATUS	2	2	0
ISOPSETTA ISOLEPIS	1	1	2
ONCORHYNCHUS TSHAWYTSCHA	1	8	3
ENOPHRYS BISON	1	1	3
LEPTOCOTTUS ARMATUS	15	5	27
PLATICHTHYS STELLATUS	7	7	0
UNK SCULPIN	21	9	3
COTTUS ALEUTICUS	0	0	15

ROBERTS BANK

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-04-17	80-04-17	80-04-17
TIME(PST)	1200	1215	1230
MIN. AFTER LOW	-65	-50	-35
SALINITY(O/OO)	-	-	-
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	-	-	-

ROBERTS BANK

	S=1 H=1	S=1 H=2	S=1 H=3
DATE	80-05-01	80-05-01	80-05-01
TIME(PST)	1200	1230	1300
MIN. AFTER LOW	-5	25	55
SALINITY(O/OO)	21	21	21
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	12	12	12

ROBERTS BANK

SPECIES	S=2 H=1 80-05-16	S=3 H=1 80-05-16	S=4 H=1 80-05-16
ONCORHYNCHUS GORBUSCHA	74	13	0
HYPOMESUS PRETIOSUS PRETIOSU	2	0	1
APODICHTHYS FLAVIDUS	0	0	1
AMMODYTES HEXAPTERUS	137	1	0
CITHARICHTHYS SORDIDUS	0	0	1
UNK LARVA	0	10	1
ONCORHYNCHUS KETA	13	0	0
GASTEROSTEUS ACULEATUS	0	1	0
ISOPSETTA ISOLEPIS	0	2	0
ONCORHYNCHUS TSHAWYTSCHA	39	44	0
LEPTOCOTTUS ARMATUS	19	2	0
UNK SCULPIN	5	0	0

ROBERTS BANK

SPECIES	S=5 H=1 80-05-16	S=7 H=1 80-05-16	S=7 H=2 80-05-16
ONCORHYNCHUS GORBUSCHA	34	13	158
AULORHYNCHUS FLAVIDUS	3	0	0
CITHARICHTHYS SORDIDUS	1	0	0
UNK LARVA	0	31	19
ONCORHYNCHUS KETA	10	2	0
ISOPSETTA ISOLEPIS	8	2	0
ONCORHYNCHUS TSHAWYTSCHA	1	4	0
LEPTOCOTTUS ARMATUS	0	0	8
PLATICHTHYS STELLATUS	7	0	0

SPECIES	S=1 H=1 80-05-16
ONCORHYNCHUS TSHAWYTSCHA	7
ONCORHYNCHUS KETA	23
ONCORHYNCHUS GORBUSCHA	470
LEPTOCOTTUS ARMATUS	13
UNK SCULPIN	6
PHOLIS LAETA	1
APODICHTHYS FLAVIDUS	1
AMMODYTES HEXAPTERUS	48

ROBERTS BANK

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	80-05-16	80-05-16	80-05-16
TIME(PST)	925	1320	1225
MIN. AFTER LOW	-195	45	-10
SALINITY(O/OO)	-	-	-
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	12	-	-

ROBERTS BANK

	S=5 H=1	S=7 H=1	S=7 H=2
DATE	80-05-16	80-05-16	80-05-16
TIME(PST)	1300	1000	1015
MIN. AFTER LOW	25	-155	-140
SALINITY(O/OO)	-	-	-
TEMPERATURE(C)	-	-	-
DISSOLVED OXYGEN(MG/L)	-	-	-

ROBERTS BANK S=1 H=1

DATE	80-05-16
TIME (PST)	0850
MIN. AFTER LOW	-160
SALINITY (O/OO)	-
TEMPERATURE (C)	-
DISSOLVED OXYGEN(MG/L)	11.7

ROBERTS BANK

SPECIES	S=7 H=3 80-05-16	S=1 H=1 80-05-30	S=2 H=1 80-05-30
AULORHYNCHUS FLAVIDUS	0	90	0
CYMATOGASTER AGGREGATA	2	0	0
CITHARICHTHYS SORDIDUS	0	3	0
UNK LARVA	13	0	0
GASTEROSTEUS ACULEATUS	1	0	0
PAROPHRYS VETULUS	0	3	84
LEPTOCOTTUS ARMATUS	30	179	91
PLATICHTHYS STELLATUS	0	4	0
PSYCHROLUTES PARADOXUS	0	104	0
UNK FLATFISH	0	1	0

ROBERTS BANK

SPECIES	S=4 H=1 80-05-30	S=5 H=1 80-05-30	S=6 H=1 80-05-30
AULORHYNCHUS FLAVIDUS	4	0	0
CITHARICHTHYS SORDIDUS	15	0	0
ONCORHYNCHUS KETA	0	16	0
SYNGNATHUS GRISEOLINEATUS	1	0	0
PAROPHRYS VETULUS	58	15	50
LEPTOCOTTUS ARMATUS	7	0	0
PLATICHTHYS STELLATUS	8	15	0
UNK FLATFISH	0	6	0

ROBERTS BANK

	S=7 H=3	S=1 H=1	S=2 H=1
DATE	80-05-16	80-05-30	80-05-30
TIME(PST)	1025	1030	1328
MIN. AFTER LOW	-130	-130	103
SALINITY(O/OO)	-	23	23
TEMPERATURE(C)	-	14	17
DISSOLVED OXYGEN(MG/L)	-	15	17

ROBERTS BANK

	S=4 H=1	S=5 H=1	S=6 H=1
DATE	80-05-30	80-05-30	80-05-30
TIME(PST)	1120	1200	1225
MIN. AFTER LOW	-80	15	40
SALINITY(O/OO)	22	21	21
TEMPERATURE(C)	16	18	17
DISSOLVED OXYGEN(MG/L)	15	16	16

ROBERTS BANK

SPECIES	S=7 H=1 80-05-30	S=2 H=1 80-06-13	S=3 H=1 80-06-13
CLUPEA HARENGUS PALLASI	0	26	100
HYPOMESUS PRETIOSUS PRETIOSU	0	11	0
AULORHYNCHUS FLAVIDUS	0	0	100
CYMATOGASTER AGGREGATA	0	25	0
LUMPENUS SAGITTA	0	0	50
APODICHTHYS FLAVIDUS	0	0	15
AGONUS ACIPENSERINUS	0	0	1
GASTEROSTEUS ACULEATUS	0	0	11
PHOLIS LAETA	0	0	10
ARTEDIUS FENESTRALIS	0	0	4
SYNGNATHUS GRISEOLINEATUS	0	0	50
HEXAGRAMMOS STELLERI	0	0	5
ASEMICHTHYS TAYLORI	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	2	0
ENOPHRYS BISON	0	0	1
PAROPHRYS VETULUS	68	3	80
LEPTOCOTTUS ARMATUS	18	15	65
PSYCHROLUTES PARADOXUS	0	0	7
UNK SCULPIN	1	0	0

ROBERTS BANK

SPECIES	S=4 H=1 80-06-13	S=5 H=1 80-06-13	S=6 H=1 80-06-13
SQUALUS ACANTHIAS	1	0	0
CLUPEA HARENGUS PALLASI	232	110	0
HYPOMESUS PRETIOSUS PRETIOSU	1	16	0
AULORHYNCHUS FLAVIDUS	16	13	15
CYMATOGASTER AGGREGATA	97	59	371
LUMPENUS SAGITTA	17	0	0
APODICHTHYS FLAVIDUS	5	0	0
AMMODYTES HEXAPTERUS	0	3	0
ARTEDIUS FENESTRALIS	0	0	1
SYNGNATHUS GRISEOLINEATUS	0	3	0
PHOLIS ORNATA	3	0	0
HEXAGRAMMOS STELLERI	4	0	0
ISOPSETTA ISOLEPIS	0	0	9
LEPIDOPSETTA BILINEATA	1	1	0
ONCORHYNCHUS TSHAWYTSCHA	7	7	0
PAROPHRYS VETULUS	108	61	66
LEPTOCOTTUS ARMATUS	34	2	0
PLATICHTHYS STELLATUS	125	0	0

ROBERTS BANK

	S=7 H=1	S=2 H=1	S=3 H=1
DATE	80-05-30	80-06-13	80-06-13
TIME(PST)	1300	1500	1130
MIN. AFTER LOW	75	200	-10
SALINITY(O/OO)	23	21	22
TEMPERATURE(C)	17	22	20
DISSOLVED OXYGEN(MG/L)	17	18	13

ROBERTS BANK

	S=4 H=1	S=5 H=1	S=6 H=1
DATE	80-06-13	80-06-13	80-06-13
TIME(PST)	1150	1230	1250
MIN. AFTER LOW	10	50	70
SALINITY(O/OO)	23	24	-
TEMPERATURE(C)	18	18	-
DISSOLVED OXYGEN(MG/L)	13	13	-

ROBERTS BANK

SPECIES	S=7 H=1 80-06-13	S=1 H=1 80-06-28	S=2 H=1 80-06-28
CLUPEA HARENGUS PALLASI	35	750	1
HYPOMESUS PRETIOSUS PRETIOSU	2	2	0
AULORHYNCHUS FLAVIDUS	0	1	1
CYMATOGASTER AGGREGATA	38	18	152
LUMPENUS SAGITTA	0	2	0
APODICHTHYS FLAVIDUS	0	1	18
ONCORHYNCHUS KETA	0	2	0
GASTEROSTEUS ACULEATUS	0	30	135
PHOLIS LAETA	0	4	2
ARTEDIUS FENESTRALIS	0	0	1
ONCORHYNCHUS KISUTCH	0	1	0
PHOLIS ORNATA	0	6	0
ONCORHYNCHUS TSHAWYTSCHA	1	22	0
PAROPHRYS VETULUS	16	0	0
LEPTOCOTTUS ARMATUS	23	13	28
PLATICHTHYS STELLATUS	13	9	7

ROBERTS BANK

SPECIES	S=3 H=1 80-06-28	S=4 H=1 80-06-28	S=5 H=1 80-06-28
CLUPEA HARENGUS PALLASI	500	2500	0
HYPOMESUS PRETIOSUS PRETIOSU	2	0	0
AULORHYNCHUS FLAVIDUS	40	0	0
CYMATOGASTER AGGREGATA	110	277	231
LUMPENUS SAGITTA	17	0	0
APODICHTHYS FLAVIDUS	13	10	0
AMMODYTES HEXAPTERUS	0	1	0
GASTEROSTEUS ACULEATUS	0	1	0
PHOLIS LAETA	2	0	0
ARTEDIUS FENESTRALIS	3	0	0
PHOLIS ORNATA	3	2	0
HEXAGRAMMOS STELLERI	1	1	0
ONCORHYNCHUS TSHAWYTSCHA	42	24	0
PAROPHRYS VETULUS	3	6	14
LEPTOCOTTUS ARMATUS	11	19	0
PLATICHTHYS STELLATUS	8	11	17

ROBERTS BANK

	S=7 H=1	S=1 H=1	S=2 H=1
DATE	80-06-13	80-06-28	80-06-28
TIME(PST)	1430	1240	1300
MIN. AFTER LOW	170	-85	105
SALINITY(O/OO)	-	18	17
TEMPERATURE(C)	-	18	18
DISSOLVED OXYGEN(MG/L)	-	12	16

ROBERTS BANK

	S=3 H=1	S=4 H=1	S=5 H=1
DATE	80-06-28	80-06-28	80-06-28
TIME(PST)	1120	1140	1200
MIN. AFTER LOW	5	25	45
SALINITY(O/OO)	17	18	19
TEMPERATURE(C)	19	18	20
DISSOLVED OXYGEN(MG/L)	16	11	15

ROBERTS BANK

SPECIES	S=6 H=1 80-06-29	S=7 H=1 80-06-29	S=1 H=1 80-07-10
CLUPEA HARENGUS PALLASI	4000	600	0
HYPOMESUS PRETIOSUS PRETIOSU	7	0	0
AULORHYNCHUS FLAVIDUS	50	1	0
CYMATOGASTER AGGREGATA	11	2	64
LUMPENUS SAGITTA	0	1	0
APODICHTHYS FLAVIDUS	2	0	3
AMMODYTES HEXAPTERUS	25	1	0
GASTEROSTEUS ACULEATUS	4	0	0
PHOLIS LAETA	0	0	11
ONCORHYNCHUS KISUTCH	0	1	0
SYNGNATHUS GRISEOLINEATUS	0	0	1
HEXAGRAMMOS STELLERI	0	0	1
ASEMICHTHYS TAYLORI	0	0	4
ONCORHYNCHUS TSHAWYTSCHA	8	3	1
CLINOCOTTUS ACUTICEPS	0	0	1
PAROPHRYS VETULUS	1	13	0
LEPTOCOTTUS ARMATUS	0	35	33
PLATICHTHYS STELLATUS	13	6	10
PSETTICHTHYS MELANOSTICUS	1	1	0

ROBERTS BANK

SPECIES	S=2 H=1 80-07-10	S=3 H=1 80-07-10	S=4 H=1 80-07-10
CLUPEA HARENGUS PALLASI	1	66	0
HYPOMESUS PRETIOSUS PRETIOSU	0	0	1
CYMATOGASTER AGGREGATA	18	62	5
LUMPENUS SAGITTA	1	1	1
APODICHTHYS FLAVIDUS	0	2	0
AMMODYTES HEXAPTERUS	0	0	6
UNK LARVA	0	1	0
GASTEROSTEUS ACULEATUS	2	2	1
PHOLIS LAETA	0	1	0
ISOPSETTA ISOLEPIS	0	0	3
ONCORHYNCHUS TSHAWYTSCHA	0	5	2
HEXAGRAMMOS OCTOGRAMMUS	0	1	0
ENOPHRYS BISON	0	0	2
PAROPHRYS VETULUS	0	18	25
LEPTOCOTTUS ARMATUS	39	4	3
PLATICHTHYS STELLATUS	3	40	9

ROBERTS BANK

	S=6 H=1	S=7 H=1	S=1 H=1
DATE	80-06-29	80-06-29	80-07-10
TIME(PST)	1155	1220	1255
MIN. AFTER LOW	-5	20	180
SALINITY(O/OO)	-	-	19
TEMPERATURE(C)	-	-	17
DISSOLVED OXYGEN(MG/L)	-	-	10

ROBERTS BANK

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	80-07-10	80-07-10	80-07-10
TIME(PST)	1235	1020	955
MIN. AFTER LOW	160	25	-1
SALINITY(O/OO)	18	19	20
TEMPERATURE(C)	18	19	18
DISSOLVED OXYGEN(MG/L)	12	11	10

ROBERTS BANK

SPECIES	S=7 H=1 80-07-10	S=7 H=2 80-07-10	S=1 H=1 80-07-28
CLUPEA HARENGUS PALLASI	441	7	2
HYPOMESUS PRETIOSUS PRETIOSU	0	37	0
AULORHYNCHUS FLAVIDUS	0	0	19
CYMATOGASTER AGGREGATA	113	117	649
APODICHTHYS FLAVIDUS	0	0	13
AMMODYTES HEXAPTERUS	0	0	190
GASTEROSTEUS ACULEATUS	0	0	185
EMBIOTOCA LATERALIS	1	0	0
PHOLIS LAETA	4	0	21
ARTEDIUS FENESTRALIS	1	0	7
RHACOCHILUS VACCA	0	0	1
ASEMICHTHYS TAYLORI	3	1	0
CLINOCOTTUS ACUTICEPS	0	0	3
ENOPHRYS BISON	0	0	1
PAROPHRYS VETULUS	1	2	0
LEPTOCOTTUS ARMATUS	0	51	9
PLATICHTHYS STELLATUS	1	2	4
OLIGOCOTTUS MACULOSUS	0	3	3
PSYCHROLUTES PARADOXUS	1	0	0

ROBERTS BANK

SPECIES	S=2 H=1 80-07-28	S=3 H=1 80-07-28	S=4 H=1 80-07-28
CLUPEA HARENGUS PALLASI	8	0	141
HYPOMESUS PRETIOSUS PRETIOSU	20	40	9
AULORHYNCHUS FLAVIDUS	20	0	4
CYMATOGASTER AGGREGATA	250	261	259
APODICHTHYS FLAVIDUS	0	4	4
UNK LARVA	1	0	1
GASTEROSTEUS ACULEATUS	96	20	5
PHOLIS LAETA	7	9	19
ARTEDIUS FENESTRALIS	2	0	5
RHACOCHILUS VACCA	250	20	0
HEXAGRAMMOS STELLERI	3	0	0
LEPIDOPSETTA BILINEATA	0	0	1
BLEPSIAS CIRRHOSUS	1	0	0
PAROPHRYS VETULUS	0	5	5
LEPTOCOTTUS ARMATUS	0	4	6
PLATICHTHYS STELLATUS	0	3	0
OLIGOCOTTUS MACULOSUS	0	1	0
ASCELICHTHYS RHODORUS	0	0	1

ROBERTS BANK

	S=7 H=1	S=7 H=2	S=1 H=1
DATE	80-07-10	80-07-10	80-07-28
TIME(PST)	1130	1210	1010
MIN. AFTER LOW	95	135	-90
SALINITY(O/OO)	21	21	26
TEMPERATURE(C)	17	17	16
DISSOLVED OXYGEN(MG/L)	10	10	12

ROBERTS BANK

	S=2 H=1	S=3 H=1	S=4 H=1
DATE	80-07-28	80-07-28	80-07-28
TIME(PST)	1310	1115	1145
MIN. AFTER LOW	90	-25	5
SALINITY(O/OO)	26	25	25
TEMPERATURE(C)	21	18	18
DISSOLVED OXYGEN(MG/L)	16	10	10

ROBERTS BANK

SPECIES	S=5 H=1 80-07-28	S=6 H=1 80-07-28	S=7 H=1 80-07-28
CLUPEA HARENGUS PALLASI	1	0	3000
AULORHYNCHUS FLAVIDUS	0	1	0
CYMATOGASTER AGGREGATA	1000	1	51
APODICHTHYS FLAVIDUS	0	0	5
AMMODYTES HEXAPTERUS	0	0	100
GASTEROSTEUS ACULEATUS	0	3	0
PHOLIS LAETA	0	1	7
RHACOCHILUS VACCA	0	0	1
HEXAGRAMMOS STELLERI	0	0	1
LEPIDOPSETTA BILINEATA	1	0	0
ENOPHRYS BISON	0	0	1
PAROPHRYS VETULUS	12	0	0
LEPTOCOTTUS ARMATUS	2	3	0
PLATICHTHYS STELLATUS	2	0	0
JUV SOLE	1	0	0

ROBERTS BANK

SPECIES	S=1 H=1 80-08-10	S=2 H=1 80-08-10	S=4 H=1 80-08-10
CLUPEA HARENGUS PALLASI	137	0	1
HYPOMESUS PRETIOSUS PRETIOSU	3	1	2
AULORHYNCHUS FLAVIDUS	4	3	0
CYMATOGASTER AGGREGATA	163	21	0
APODICHTHYS FLAVIDUS	37	0	0
GASTEROSTEUS ACULEATUS	20	7	4
PHOLIS LAETA	27	0	1
SEBASTES SP	2	0	0
ARTEDIUS FENESTRALIS	1	0	0
SYNGNATHUS GRISEOLINEATUS	41	6	2
RHACOCHILUS VACCA	55	0	0
ONCORHYNCHUS TSHAWYTSCHA	6	0	0
ENOPHRYS BISON	1	0	0
PAROPHRYS VETULUS	0	38	2
LEPTOCOTTUS ARMATUS	15	31	1
PLATICHTHYS STELLATUS	0	13	0
OLIGOCOTTUS MACULOSUS	18	3	0

ROBERTS BANK

	S=5 H=1	S=6 H=1	S=7 H=1
DATE	80-07-28	80-07-28	80-07-28
TIME(PST)	1215	1245	1400
MIN. AFTER LOW	35	65	140
SALINITY(O/OO)	26	26	26
TEMPERATURE(C)	18	21	18
DISSOLVED OXYGEN(MG/L)	10	12	10

ROBERTS BANK

	S=1 H=1	S=2 H=1	S=4 H=1
DATE	80-08-10	80-08-10	80-08-10
TIME(PST)	1015	1030	1100
MIN. AFTER LOW	-50	-35	-5
SALINITY(O/OO)	26	-	-
TEMPERATURE(C)	17	-	-
DISSOLVED OXYGEN(MG/L)	12	-	-

ROBERTS BANK

SPECIES	S=5 H=1 80-08-10	S=7 H=1 80-08-10	S=1 H=1 80-09-05
CLUPEA HARENGUS PALLASI	0	3	0
AULORHYNCHUS FLAVIDUS	0	0	30
CYMATOGASTER AGGREGATA	22	136	130
APODICHTHYS FLAVIDUS	0	35	4
AMMODYTES HEXAPTERUS	0	315	0
GASTEROSTEUS ACULEATUS	0	13	60
PHOLIS LAETA	1	15	8
ARTEDIUS FENESTRALIS	0	1	6
SYNGNATHUS GRISEOLINEATUS	1	0	30
PHOLIS ORNATA	0	2	0
ONCORHYNCHUS TSHAWYTSCHA	0	1	0
PAROPHRYS VETULUS	0	1	1
LEPTOCOTTUS ARMATUS	11	27	41
PLATICHTHYS STELLATUS	1	0	2

ROBERTS BANK

SPECIES	S=2 H=1 80-09-05	S=7 H=1 80-09-05	S=1 H=1 80-09-24
CLUPEA HARENGUS PALLASI	0	0	71
AULORHYNCHUS FLAVIDUS	2	0	36
CYMATOGASTER AGGREGATA	209	140	0
APODICHTHYS FLAVIDUS	10	6	2
GASTEROSTEUS ACULEATUS	60	60	11
SYNGNATHUS GRISEOLINEATUS	0	12	40
PHOLIS ORNATA	2	5	0
ENOPHRYS BISON	0	0	2
PAROPHRYS VETULUS	10	3	0
LEPTOCOTTUS ARMATUS	35	20	3
PLATICHTHYS STELLATUS	1	4	0

ROBERTS BANK

	S=5 H=1	S=7 H=1	S=1 H=1
DATE	80-08-10	80-08-10	80-09-05
TIME(PST)	1115	945	835
MIN. AFTER LOW	10	-80	10
SALINITY(O/OO)	-	-	21
TEMPERATURE(C)	-	-	15
DISSOLVED OXYGEN(MG/L)	-	-	10

ROBERTS BANK

	S=2 H=1	S=7 H=1	S=1 H=1
DATE	80-09-05	80-09-05	80-09-24
TIME(PST)	855	755	1055
MIN. AFTER LOW	30	-30	-5
SALINITY(O/OO)	15	-	26
TEMPERATURE(C)	16	-	14
DISSOLVED OXYGEN(MG/L)	11	-	10

ROBERTS BANK

SPECIES	S=2 H=1 80-09-24	S=7 H=1 80-09-24	S=1 H=1 80-10-27
AULORHYNCHUS FLAVIDUS	1	118	1
CYMATOGASTER AGGREGATA	0	15	8
GASTEROSTEUS ACULEATUS	0	0	3
PHOLIS LAETA	0	0	3
ARTEDIUS FENESTRALIS	3	0	0
SYNGNATHUS GRISEOLINEATUS	3	1	9
CLINOCOTTUS ACUTICEPS	0	0	1
ENOPHRYS BISON	0	0	8
PAROPHRYS VETULUS	25	0	0
LEPTOCOTTUS ARMATUS	5	4	6
PLATICHTHYS STELLATUS	1	0	2
OLIGOCOTTUS MACULOSUS	0	1	0

ROBERTS BANK

SPECIES	S=2 H=1 80-10-28	S=4 H=1 80-10-28	S=5 H=1 80-10-28
AULORHYNCHUS FLAVIDUS	8	118	21
CYMATOGASTER AGGREGATA	6	10	13
APODICHTHYS FLAVIDUS	3	1	0
AGONUS ACIPENSERINUS	0	1	0
GASTEROSTEUS ACULEATUS	0	3	2
PHOLIS LAETA	11	5	1
SEBASTES SP	0	1	0
ARTEDIUS FENESTRALIS	1	1	0
SYNGNATHUS GRISEOLINEATUS	15	11	45
HEXAGRAMMOS STELLERI	3	5	0
ENOPHRYS BISON	0	0	2
PAROPHRYS VETULUS	1	1	0
LEPTOCOTTUS ARMATUS	8	3	0
PLATICHTHYS STELLATUS	4	0	1

ROBERTS BANK

	S=2 H=1	S=7 H=1	S=1 H=1
DATE	80-09-24	80-09-24	80-10-27
TIME(PST)	1105	1125	2345
MIN. AFTER LOW	5	25	-140
SALINITY(O/OO)	27	27	26
TEMPERATURE(C)	15	14	10
DISSOLVED OXYGEN(MG/L)	9	10	8

ROBERTS BANK

	S=2 H=1	S=4 H=1	S=5 H=1
DATE	80-10-28	80-10-28	80-10-28
TIME(PST)	50	115	40
MIN. AFTER LOW	-75	-50	-85
SALINITY(O/OO)	26	26	26
TEMPERATURE(C)	10	10	11
DISSOLVED OXYGEN(MG/L)	8	8	8

ROBERTS BANK

SPECIES	S=6 H=1 80-10-28	S=7 H=1 80-10-28	S=1 H=1 80-11-17
CLUPEA HARENGUS PALLASI	0	1	0
HYPOMESUS PRETIOSUS PRETIOSU	2	0	0
AULORHYNCHUS FLAVIDUS	678	0	1
CYMATOGASTER AGGREGATA	27	1	0
APODICHTHYS FLAVIDUS	0	1	0
AMMODYTES HEXAPTERUS	0	0	1
AGONUS ACIPENSERINUS	1	0	0
ANOPLARCHUS INSIGNIS	0	2	0
PHOLIS LAETA	0	4	1
ARTEDIUS FENESTRALIS	0	3	0
CITHARICHTHYS STIGMAEUS	1	0	0
HIPPOGLOSSOIDES ELASSODON	0	4	0
SYNGNATHUS GRISEOLINEATUS	54	3	0
RHACOCHILUS VACCA	1	0	0
LEPIDOPSETTA BILINEATA	2	0	0
CLINOCOTTUS ACUTICEPS	0	0	2
PAROPHRYS VETULUS	6	0	0
LEPTOCOTTUS ARMATUS	0	9	0
PLATICHTHYS STELLATUS	2	0	0

ROBERTS BANK

SPECIES	S=1 H=2 80-11-17	S=2 H=1 80-11-17	S=2 H=2 80-11-17
AULORHYNCHUS FLAVIDUS	2	0	0
GASTEROSTEUS ACULEATUS	3	0	0
PHOLIS LAETA	28	5	9
ARTEDIUS FENESTRALIS	2	4	5
ANOPLARCHUS PURPURESCENS	0	1	1
ARTEDIUS LATERALIS	1	0	0
CLINOCOTTUS ACUTICEPS	16	4	7
ENOPHRYS BISON	0	2	0
LEPTOCOTTUS ARMATUS	0	2	0
PLATICHTHYS STELLATUS	1	0	0
OLIGOCOTTUS MACULOSUS	1	51	54
MYOXOCEPHALUS POLYACANTHOCEPH	0	1	0

ROBERTS BANK

	S=6 H=1	S=7 H=1	S=1 H=1
DATE	80-10-28	80-10-28	80-11-17
TIME(PST)	45	10	559
MIN. AFTER LOW	-80	-115	-1
SALINITY(O/OO)	27	27	22
TEMPERATURE(C)	11	11	8
DISSOLVED OXYGEN(MG/L)	8	7	10

ROBERTS BANK

	S=1 H=2	S=2 H=1	S=2 H=2
DATE	80-11-17	80-11-17	80-11-17
TIME(PST)	610	630	640
MIN. AFTER LOW	10	30	40
SALINITY(O/OO)	22	22	22
TEMPERATURE(C)	8	8	8
DISSOLVED OXYGEN(MG/L)	10	10	10

ROBERTS BANK

SPECIES	S=7 H=1 80-11-17	S=1 H=1 80-12-08	S=2 H=1 80-12-09
PHOLIS LAETA	0	5	0
ARTEDIUS FENESTRALIS	0	4	0
ANOPLARCHUS PURPURESCENS	0	1	0
CLINOCOTTUS ACUTICEPS	0	15	0
OLIGOCOTTUS MACULOSUS	1	28	3

ROBERTS BANK

SPECIES	S=4 H=1 80-12-09	S=5 H=1 80-12-09	S=7 H=1 80-12-09
HYPOMESUS PRETIOSUS PRETIOSU	0	0	4
AULORHYNCHUS FLAVIDUS	0	0	22
CYMATOGASTER AGGREGATA	0	0	9
GASTEROSTEUS ACULEATUS	0	2	2
ARTEDIUS FENESTRALIS	0	0	1
SYNGNATHUS GRISEOLINEATUS	0	0	3
PAROPHRYS VETULUS	0	0	1
LEPTOCOTTUS ARMATUS	1	0	0
PLATICHTHYS STELLATUS	1	1	0

ROBERTS BANK

	S=7 H=1	S=1 H=1	S=2 H=1
DATE	80-11-17	80-12-08	80-12-09
TIME(PST)	700	2300	125
MIN. AFTER LOW	60	-75	70
SALINITY(O/OO)	24	25	26
TEMPERATURE(C)	8	5	3
DISSOLVED OXYGEN(MG/L)	9	9	10

ROBERTS BANK

	S=4 H=1	S=5 H=1	S=7 H=1
DATE	80-12-09	80-12-09	80-12-09
TIME(PST)	105	45	10
MIN. AFTER LOW	50	30	-5
SALINITY(O/OO)	28	28	28
TEMPERATURE(C)	2	2	5
DISSOLVED OXYGEN(MG/L)	11	10	10

ROBERTS BANK

SPECIES	S=1 H=1 81-01-20	S=2 H=1 81-01-20	S=7 H=1 81-01-21
CLUPEA HARENGUS PALLASI	0	2	0
HYPOMESUS PRETIOSUS PRETIOSU	0	13	0
MICROGADUS PROXIMUS	0	2	0
AULORHYNCHUS FLAVIDUS	0	45	85
CYMATOGASTER AGGREGATA	0	3	8
AGONUS ACIPENSERINUS	0	7	0
GASTEROSTEUS ACULEATUS	0	8	7
PHOLIS LAETA	1	0	0
ARTEDIUS FENESTRALIS	0	0	1
SYNGNATHUS GRISEOLINEATUS	0	4	13
ANOPLARCHUS PURPURESCENS	1	0	0
LEPIDOPSETTA BILINEATA	0	2	0
CLINOCOTTUS ACUTICEPS	6	0	2
ENOPHRYS BISON	2	0	0
PAROPHRYS VETULUS	0	8	0
LEPTOCOTTUS ARMATUS	2	4	9
PLATICHTHYS STELLATUS	0	0	2
OLIGOCOTTUS MACULOSUS	9	1	0
PSETTICHTHYS MELANOSTICUS	0	2	0
JUV SOLE	0	11	0

ROBERTS BANK

SPECIES	S=1 H=1 81-02-16	S=2 H=1 81-02-16	S=7 H=1 81-02-16
AULORHYNCHUS FLAVIDUS	10	1	0
ARTEDIUS FENESTRALIS	0	0	1
ANOPLARCHUS PURPURESCENS	1	0	0
PHOLIS SP	1	0	0
LEPIDOPSETTA BILINEATA	2	0	1
CLINOCOTTUS ACUTICEPS	7	0	0
PAROPHRYS VETULUS	2	0	0
LEPTOCOTTUS ARMATUS	3	0	1
PLATICHTHYS STELLATUS	1	0	5
OLIGOCOTTUS MACULOSUS	9	1	0
OLIGOCOTTUS RIMENSIS	1	0	0
JUV SOLE	0	1	3

ROBERTS BANK

	S=1 H=1	S=2 H=1	S=7 H=1
DATE	81-01-20	81-01-20	81-01-21
TIME(PST)	2230	2330	130
MIN. AFTER LOW	-65	-5	115
SALINITY(O/OO)	24	24	27
TEMPERATURE(C)	9	10	10
DISSOLVED OXYGEN(MG/L)	9	9	7

ROBERTS BANK

	S=1 H=1	S=2 H=1	S=7 H=1
DATE	81-02-16	81-02-16	81-02-16
TIME(PST)	2145	2220	2245
MIN. AFTER LOW	-15	20	45
SALINITY(O/OO)	25	25	27
TEMPERATURE(C)	9	10	9
DISSOLVED OXYGEN(MG/L)	9	9	9

ROBERTS BANK

SPECIES	S=1 H=1 81-03-05	S=1 H=2 81-03-05	S=2 H=1 81-03-05
HYPOMESUS PRETIOSUS PRETIOSU	1	0	1
AULORHYNCHUS FLAVIDUS	3	0	0
CYMATOGASTER AGGREGATA	0	1	0
AGONUS ACIPENSERINUS	0	0	1
GASTEROSTEUS ACULEATUS	4	2	0
CITHARICHTHYS STIGMAEUS	1	0	0
SYNGNATHUS GRISEOLINEATUS	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	1	1
ENOPHRYS BISON	0	1	0
PAROPHRYS VETULUS	3	2	2
LEPTOCOTTUS ARMATUS	0	0	3
OLIGOCOTTUS MACULOSUS	2	10	0
UNK SCULPIN	0	0	1
ONCORHYNCHUS KETA	4	0	0

ROBERTS BANK

SPECIES	S=2 H=2 81-03-05	S=7 H=1 81-03-05	S=7 H=2 81-03-05
AULORHYNCHUS FLAVIDUS	2	0	0
CYMATOGASTER AGGREGATA	1	0	0
PHOLIS LAETA	0	1	0
SYNGNATHUS GRISEOLINEATUS	1	0	0
ANOPLARCHUS PURPURESCENS	0	1	0
LEPIDOPSETTA BILINEATA	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	0	1
PAROPHRYS VETULUS	5	6	3
LEPTOCOTTUS ARMATUS	2	5	0
PLATICHTHYS STELLATUS	1	0	1
OLIGOCOTTUS MACULOSUS	0	15	17

ROBERTS BANK

	S=1 H=1	S=1 H=2	S=2 H=1
DATE	81-03-05	81-03-05	81-03-05
TIME(PST)	2245	2255	2310
MIN. AFTER LOW	-20	-10	5
SALINITY(O/OO)	26	26	27
TEMPERATURE(C)	8	8	7
DISSOLVED OXYGEN(MG/L)	9	9	9

ROBERTS BANK

	S=2 H=2	S=7 H=1	S=7 H=2
DATE	81-03-05	81-03-05	81-03-05
TIME(PST)	2315	2345	2355
MIN. AFTER LOW	10	40	50
SALINITY(O/OO)	27	28	28
TEMPERATURE(C)	7	8	8
DISSOLVED OXYGEN(MG/L)	9	10	10

ROBERTS BANK

SPECIES	S=1 H=1 81-03-23	S=2 H=1 81-03-23	S=7 H=1 81-03-23
AULORHYNCHUS FLAVIDUS	2	0	0
GASTEROSTEUS ACULEATUS	1	2	0
SYNGNATHUS GRISEOLINEATUS	1	0	0
PAROPHRYS VETULUS	1	0	0
LEPTOCOTTUS ARMATUS	1	1	0
PLATICHTHYS STELLATUS	4	1	0

ROBERTS BANK

SPECIES	S=1 H=1 81-04-09	S=1 H=2 81-04-09	S=2 H=1 81-04-09
HYPOMESUS PRETIOSUS PRETIOSU	1	0	13
AULORHYNCHUS FLAVIDUS	0	0	8
ONCORHYNCHUS KETA	2	0	1
GASTEROSTEUS ACULEATUS	0	1	2
SYNGNATHUS GRISEOLINEATUS	0	1	0
LEPIDOPSETTA BILINEATA	1	0	0
ONCORHYNCHUS TSHAWYTSCHA	0	0	8
ENOPHRYS BISON	0	1	0
PAROPHRYS VETULUS	3	2	12
LEPTOCOTTUS ARMATUS	0	0	1
OLIGOCOTTUS MACULOSUS	0	0	1

ROBERTS BANK

	S=1 H=1	S=2 H=1	S=7 H=1
DATE	81-03-23	81-03-23	81-03-23
TIME(PST)	1345	1430	1530
MIN. AFTER LOW	30	75	135
SALINITY(O/OO)	26	26	28
TEMPERATURE(C)	13	12	11
DISSOLVED OXYGEN(MG/L)	12	12	13

ROBERTS BANK

	S=1 H=1	S=1 H=2	S=2 H=1
DATE	81-04-09	81-04-09	81-04-09
TIME(PST)	1400	1410	1430
MIN. AFTER LOW	-70	-60	-40
SALINITY(O/OO)	25	25	25
TEMPERATURE(C)	10	10	11
DISSOLVED OXYGEN(MG/L)	13	13	12

ROBERTS BANK

SPECIES	S=7 H=1 81-04-09	S=1 H=1 81-04-21	S=2 H=1 81-04-21
HYPOMESUS PRETIOSUS PRETIOSU	3	0	0
AULORHYNCHUS FLAVIDUS	9	1	0
APODICHTHYS FLAVIDUS	0	10	0
AMMODYTES HEXAPTERUS	0	0	45
HEXAGRAMMOS DECOGRAMMUS	0	2	0
MALLOTUS VILLOSUS	0	0	59
GASTEROSTEUS ACULEATUS	1	1	0
ANOPLARCHUS PURPURESCENS	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	5	0	0
LEPTOCOTTUS ARMATUS	0	36	90
PLATICHTHYS STELLATUS	1	0	0
JUV SOLE	0	7	57

ROBERTS BANK

SPECIES	S=7 H=1 81-04-21	S=1 H=1 81-05-06	S=2 H=1 81-05-06
HYPOMESUS PRETIOSUS PRETIOSU	0	0	31
CYMATOGASTER AGGREGATA	0	0	1
APODICHTHYS FLAVIDUS	0	1	0
UNK LARVA	9	0	0
ONCORHYNCHUS KETA	0	0	26
ONCORHYNCHUS TSHAWYTSCHA	0	1	1
PAROPHRYS VETULUS	0	3	0
LEPTOCOTTUS ARMATUS	159	16	0
PLATICHTHYS STELLATUS	1	0	0
JUV SOLE	7	0	0
UNK SCULPIN	1	0	0

ROBERTS BANK

	S=7 H=1	S=1 H=1	S=2 H=1
DATE	81-04-09	81-04-21	81-04-21
TIME(PST)	1500	1155	1245
MIN. AFTER LOW	-10	-55	-5
SALINITY(O/OO)	25	25	24
TEMPERATURE(C)	11	12	13
DISSOLVED OXYGEN(MG/L)	13	15	12

ROBERTS BANK

	S=7 H=1	S=1 H=1	S=2 H=1
DATE	81-04-21	81-05-06	81-05-06
TIME(PST)	1315	1130	1350
MIN. AFTER LOW	25	-90	50
SALINITY(O/OO)	25	22	26
TEMPERATURE(C)	12	12	15
DISSOLVED OXYGEN(MG/L)	14	14	16

ROBERTS BANK

SPECIES	S=3 H=1 81-05-06	S=4 H=1 81-05-06	S=5 H=1 81-05-06
AULORHYNCHUS FLAVIDUS	1	0	2
AMMODYTES HEXAPTERUS	1	9	60
LIPARIS FLORAE	0	0	2
ONCORHYNCHUS KETA	2	0	23
GASTEROSTEUS ACULEATUS	2	0	10
LEPIDOPSETTA BILINEATA	1	1	0
ONCORHYNCHUS TSHAWYTSCHA	3	0	3
PAROPHRYS VETULUS	11	8	10
UNK SCULPIN	1	0	0

ROBERTS BANK

SPECIES	S=6 H=1 81-05-06	S=7 H=1 81-05-06	S=1 H=1 81-05-20
CYMATOGASTER AGGREGATA	0	9	0
AMMODYTES HEXAPTERUS	9	1	0
LIPARIS FLORAE	0	0	1
CITHARICHTHYS SORDIDUS	0	0	1
PHOLIS LAETA	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	1	11	0
PAROPHRYS VETULUS	60	0	29
LEPTOCOTTUS ARMATUS	0	0	118
PLATICHTHYS STELLATUS	0	0	26
OLIGOCOTTUS MACULOSUS	0	0	33

ROBERTS BANK

	S=3 H=1	S=4 H=1	S=5 H=1
DATE	81-05-06	81-05-06	81-05-06
TIME(PST)	1150	1200	1210
MIN. AFTER LOW	-70	-60	-50
SALINITY(O/OO)	26	26	26
TEMPERATURE(C)	13	13	13
DISSOLVED OXYGEN(MG/L)	14	13	15

ROBERTS BANK

	S=6 H=1	S=7 H=1	S=1 H=1
DATE	81-05-06	81-05-06	81-05-20
TIME(PST)	1230	1245	1145
MIN. AFTER LOW	-30	-15	-30
SALINITY(O/OO)	26	26	22
TEMPERATURE(C)	14	14	16
DISSOLVED OXYGEN(MG/L)	14	15	12

ROBERTS BANK

SPECIES	S=2 H=1 81-05-20	S=7 H=1 81-05-20	S=1 H=1 81-06-01
HYPOMESUS PRETIOSUS PRETIOSU	4	0	0
AULORHYNCHUS FLAVIDUS	7	0	66
APODICHTHYS FLAVIDUS	2	0	2
CITHARICHTHYS SORDIDUS	0	1	2
ONCORHYNCHUS KETA	0	5	0
MALLOTUS VILLOSUS	0	1	0
GASTEROSTEUS ACULEATUS	1	0	0
PHOLIS LAETA	3	1	15
ONCORHYNCHUS TSHAWYTSCHA	1	1	0
SEBASTES SP.	0	0	1
PAROPHRYS VETULUS	14	11	1
LEPTOCOTTUS ARMATUS	112	126	15
PLATICHTHYS STELLATUS	0	0	8
OLIGOCOTTUS MACULOSUS	1	3	10
UNK SCULPIN	2	0	0

ROBERTS BANK

SPECIES	S=2 H=1 81-06-01	S=4 H=1 81-06-01	S=6 H=1 81-06-01
CLUPEA HARENGUS PALLASI	4	107	1
HYPOMESUS PRETIOSUS PRETIOSU	1	4	0
PORICHTHYS NOTATUS	1	0	0
AULORHYNCHUS FLAVIDUS	2	17	4
CYMATOGASTER AGGREGATA	9	3	0
APODICHTHYS FLAVIDUS	2	0	0
CITHARICHTHYS SORDIDUS	0	0	1
ONCORHYNCHUS KETA	0	17	8
GASTEROSTEUS ACULEATUS	2	1	3
PHOLIS LAETA	1	1	0
ONCORHYNCHUS KISUTCH	0	7	0
SYNGNATHUS GRISEOLINEATUS	0	2	4
PHOLIS SP	1	0	0
LEPIDOPSETTA BILINEATA	0	1	1
ONCORHYNCHUS TSHAWYTSCHA	0	34	17
UNK ROCKFISH	0	8	0
PAROPHRYS VETULUS	10	2	30
LEPTOCOTTUS ARMATUS	14	0	7
PLATICHTHYS STELLATUS	5	18	7

ROBERTS BANK

	S=2 H=1	S=7 H=1	S=1 H=1
DATE	81-05-20	81-05-20	81-06-01
TIME(PST)	1300	1335	1000
MIN. AFTER LOW	45	80	-25
SALINITY(O/OO)	24	24	14
TEMPERATURE(C)	18	15	17
DISSOLVED OXYGEN(MG/L)	17	14	14

ROBERTS BANK

	S=2 H=1	S=4 H=1	S=6 H=1
DATE	81-06-01	81-06-01	81-06-01
TIME(PST)	1200	1100	1040
MIN. AFTER LOW	95	35	15
SALINITY(O/OO)	15	15	20
TEMPERATURE(C)	18	17	17
DISSOLVED OXYGEN(MG/L)	17	12	13

ROBERTS BANK

SPECIES	S=7 H=1 81-06-01	S=1 H=1 81-06-16	S=1 H=2 81-06-16
CLUPEA HARENGUS PALLASI	1	0	0
HYPOMESUS PRETIOSUS PRETIOSU	4	1	0
MICROGADUS PROXIMUS	0	0	9
AULORHYNCHUS FLAVIDUS	0	0	6
CYMATOGASTER AGGREGATA	36	2	3
LUMPENUS SAGITTA	1	0	0
APODICHTHYS FLAVIDUS	0	6	5
AMMODYTES HEXAPTERUS	0	4	0
HEXAGRAMMOS DECOGRAMMUS	0	1	0
ONCORHYNCHUS KETA	4	1	0
GASTEROSTEUS ACULEATUS	0	9	15
PHOLIS LAETA	0	24	19
ARTEDIUS FENESTRALIS	0	12	13
ANOPLARCHUS PURPURESCENS	0	0	1
PHOLIS ORNATA	0	0	1
PHOLIS SP	0	1	1
ASEMICHTHYS TAYLORI	0	5	0
LEPIDOPSETTA BILINEATA	0	0	1
ONCORHYNCHUS TSHAWYTSCHA	42	0	0
CLINOCOTTUS ACUTICEPS	0	0	1
ENOPHRYS BISON	0	4	1
PAROPHRYS VETULUS	7	0	0
LEPTOCOTTUS ARMATUS	10	51	56
PLATICHTHYS STELLATUS	0	7	3
OLIGOCOTTUS MACULOSUS	0	2	7
PSETTICHTHYS MELANOSTICUS	0	0	1
ASCELICHTHYS RHODORUS	0	1	3
MYOXOCEPHALUS POLYACANTHOCEPH	0	0	5

ROBERTS BANK

	S=7 H=1	S=1 H=1	S=1 H=2
DATE	81-06-01	81-06-16	81-06-16
TIME(PST)	1130	820	840
MIN. AFTER LOW	65	-150	-130
SALINITY(O/OO)	17	16	16
TEMPERATURE(C)	16	15	15
DISSOLVED OXYGEN(MG/L)	13	12	12

ROBERTS BANK

SPECIES	S=1 H=3 81-06-16	S=5 H=1 81-06-16	S=5 H=2 81-06-16
CLUPEA HARENGUS PALLASI	11	0	0
HYPOMESUS PRETIOSUS PRETIOSU	0	0	1
MICROGADUS PROXIMUS	13	0	0
AULORHYNCHUS FLAVIDUS	68	1	1
CYMATOGASTER AGGREGATA	2	1	0
LUMPENUS SAGITTA	17	0	4
APODICHTHYS FLAVIDUS	16	0	0
AMMODYTES HEXAPTERUS	1	0	0
CITHARICHTHYS SORDIDUS	1	0	0
ONCORHYNCHUS KETA	3	1	1
GASTEROSTEUS ACULEATUS	41	0	0
PHOLIS LAETA	22	0	1
PHOLIS ORNATA	1	0	0
LEPIDOPSETTA BILINEATA	0	0	2
ONCORHYNCHUS TSHAWYTSCHA	0	1	1
ENOPHRYS BISON	2	0	0
PAROPHRYS VETULUS	6	5	8
LEPTOCOTTUS ARMATUS	33	2	9
PLATICHTHYS STELLATUS	38	0	1
OLIGOCOTTUS MACULOSUS	4	0	0
OLIGOCOTTUS RIMENSIS	2	0	0
PSETTICHTHYS MELANOSTICUS	0	0	2
PSYCHROLUTES PARADOXUS	1	0	0
ASCELICHTHYS RHODORUS	2	0	0

ROBERTS BANK

	S=1 H=3	S=5 H=1	S=5 H=2
DATE	81-06-16	81-06-16	81-06-16
TIME(PST)	850	1105	1115
MIN. AFTER LOW	-120	15	25
SALINITY(O/OO)	16	-	-
TEMPERATURE(C)	15	17	17
DISSOLVED OXYGEN(MG/L)	12	16	16

ROBERTS BANK

SPECIES	S=5 H=3 81-06-16	S=7 H=1 81-06-16	S=7 H=2 81-06-16
CLUPEA HARENGUS PALLASI	0	104	0
CYMATOGASTER AGGREGATA	0	0	1
APODICHTHYS FLAVIDUS	0	4	3
AMMODYTES HEXAPTERUS	0	8	0
ONCORHYNCHUS KETA	0	0	1
PHOLIS LAETA	0	4	9
ARTEDIUS FENESTRALIS	0	3	6
CLUPEA HARENGUS PALLASI(JUV)	0	1	0
PHOLIS ORNATA	0	1	1
ONCORHYNCHUS TSHAWYTSCHA	0	2	0
CLINOCOTTUS ACUTICEPS	0	3	0
ENOPHRYS BISON	0	1	2
PAROPHRYS VETULUS	4	0	0
LEPTOCOTTUS ARMATUS	5	5	5
PLATICHTHYS STELLATUS	1	2	3
OLIGOCOTTUS MACULOSUS	0	35	28
MYOXOCEPHALUS POLYACANTHOCEPH	0	0	2

ROBERTS BANK

	S=5 H=3	S=7 H=1	S=7 H=2
DATE	81-06-16	81-06-16	81-06-16
TIME(PST)	1125	1230	1240
MIN. AFTER LOW	35	100	110
SALINITY(O/OO)	-	14	14
TEMPERATURE(C)	17	15	15
DISSOLVED OXYGEN(MG/L)	16	15	15

ROBERTS BANK

SPECIES	S=7 H=3 81-06-16	S=1 H=1 81-06-29	S=1 H=2 81-06-29
CLUPEA HARENGUS PALLASI	34	8	0
HYPOMESUS PRETIOSUS PRETIOSU	0	1	0
MICROGADUS PROXIMUS	0	7	0
AULORHYNCHUS FLAVIDUS	0	43	0
CYMATOGASTER AGGREGATA	2	130	5
LUMPENUS SAGITTA	0	11	0
APODICHTHYS FLAVIDUS	8	14	0
AMMODYTES HEXAPTERUS	1	1	0
ONCORHYNCHUS KETA	0	22	0
GASTEROSTEUS ACULEATUS	0	32	0
PHOLIS LAETA	11	26	0
ARTEDIUS FENESTRALIS	2	0	0
SYNGNATHUS GRISEOLINEATUS	0	1	0
ANOPLARCHUS PURPURESCENS	1	0	0
HEXAGRAMMOS STELLERI	0	1	0
POLYPERA GREENI	0	1	0
ONCORHYNCHUS TSHAWYTSCHA	3	67	1
ENOPHRYS BISON	0	2	0
PAROPHRYS VETULUS	0	1	0
LEPTOCOTTUS ARMATUS	8	32	6
PLATICHTHYS STELLATUS	1	34	16
OLIGOCOTTUS MACULOSUS	30	27	0
PSYCHROLUTES PARADOXUS	0	6	0
ASCELICHTHYS RHODORUS	0	1	0
COTTUS ALEUTICUS	0	1	0

ROBERTS BANK

	S=7 H=3	S=1 H=1	S=1 H=2
DATE	81-06-16	81-06-29	81-06-29
TIME(PST)	1255	745	1245
MIN. AFTER LOW	125	-90	210
SALINITY(O/OO)	14	19	19
TEMPERATURE(C)	15	16	16
DISSOLVED OXYGEN(MG/L)	15	13	13

ROBERTS BANK

SPECIES	S=1 H=3 81-06-29	S=2 H=1 81-06-29	S=3 H=1 81-06-29
CLUPEA HARENGUS PALLASI	0	3	0
HYPOMESUS PRETIOSUS PRETIOSU	14	0	19
MICROGADUS PROXIMUS	0	0	3
AULORHYNCHUS FLAVIDUS	1	0	171
CYMATOGASTER AGGREGATA	13	1	3
APODICHTHYS FLAVIDUS	0	0	14
AMMODYTES HEXAPTERUS	0	1	0
COTTUS ASPER	0	0	2
GASTEROSTEUS ACULEATUS	3	0	1
PHOLIS LAETA	0	1	29
CLUPEA HARENGUS PALLASI(JUV)	0	2	0
HEXAGRAMMOS STELLERI	0	0	5
LEPIDOPSETTA BILINEATA	0	0	5
ONCORHYNCHUS TSHAWYTSCHA	1	0	3
BLEPSIAS CIRRHOSUS	0	0	1
PAROPHRYS VETULUS	0	0	29
LEPTOCOTTUS ARMATUS	15	24	7
PLATICHTHYS STELLATUS	6	34	32
OLIGOCOTTUS MACULOSUS	0	9	1

ROBERTS BANK

SPECIES	S=4 H=1 81-06-29	S=5 H=1 81-06-29	S=7 H=1 81-06-29
HYPOMESUS PRETIOSUS PRETIOSU	1	0	0
AULORHYNCHUS FLAVIDUS	30	4	0
CYMATOGASTER AGGREGATA	7	0	0
APODICHTHYS FLAVIDUS	4	2	0
AMMODYTES HEXAPTERUS	96	1	0
CITHARICHTHYS SORDIDUS	1	0	0
GASTEROSTEUS ACULEATUS	1	0	0
PHOLIS LAETA	7	0	1
CLUPEA HARENGUS PALLASI(JUV)	1	0	0
HEXAGRAMMOS STELLERI	1	0	0
LEPIDOPSETTA BILINEATA	6	9	0
ONCORHYNCHUS TSHAWYTSCHA	0	0	1
ENOPHRYS BISON	1	0	0
PAROPHRYS VETULUS	33	37	31
LEPTOCOTTUS ARMATUS	8	21	27
PLATICHTHYS STELLATUS	19	0	7
OLIGOCOTTUS MACULOSUS	2	0	8
PSETTICHTHYS MELANOSTICUS	0	5	0

ROBERTS BANK

	S=1 H=3	S=2 H=1	S=3 H=1
DATE	81-06-29	81-06-29	81-06-29
TIME(PST)	1305	1230	914
MIN. AFTER LOW	230	195	-1
SALINITY(O/OO)	19	19	-
TEMPERATURE(C)	16	17	17
DISSOLVED OXYGEN(MG/L)	13	14	14

ROBERTS BANK

	S=4 H=1	S=5 H=1	S=7 H=1
DATE	81-06-29	81-06-29	81-06-29
TIME(PST)	850	950	1030
MIN. AFTER LOW	-25	35	75
SALINITY(O/OO)	21	-	20
TEMPERATURE(C)	17	-	17
DISSOLVED OXYGEN(MG/L)	13	-	13

ROBERTS BANK

SPECIES	S=7 H=2 81-06-29	S=9 H=1 81-06-29
CLUPEA HARENGUS PALLASI	1	918
HYPOMESUS PRETIOSUS PRETIOSU	70	0
CYMATOGASTER AGGREGATA	4	6
LUMPENUS SAGITTA	0	1
APODICHTHYS FLAVIDUS	4	3
AMMODYTES HEXAPTERUS	1	76
GASTEROSTEUS ACULEATUS	1	2
PHOLIS LAETA	13	0
SEBASTES SP	0	1
ARTEDIUS FENESTRALIS	1	0
CLUPEA HARENGUS PALLASI(JUV)	0	2
PHOLIS ORNATA	1	0
ENOPHRYS BISON	2	0
PAROPHRYS VETULUS	15	0
LEPTOCOTTUS ARMATUS	54	0
PLATICHTHYS STELLATUS	12	0
OLIGOCOTTUS MACULOSUS	58	1

ROBERTS BANK

	S=7 H=2	S=9 H=1
DATE	81-06-29	81-06-29
TIME(PST)	1040	1150
MIN. AFTER LOW	85	155
SALINITY(O/OO)	20	-
TEMPERATURE(C)	17	17
DISSOLVED OXYGEN(MG/L)	13	-

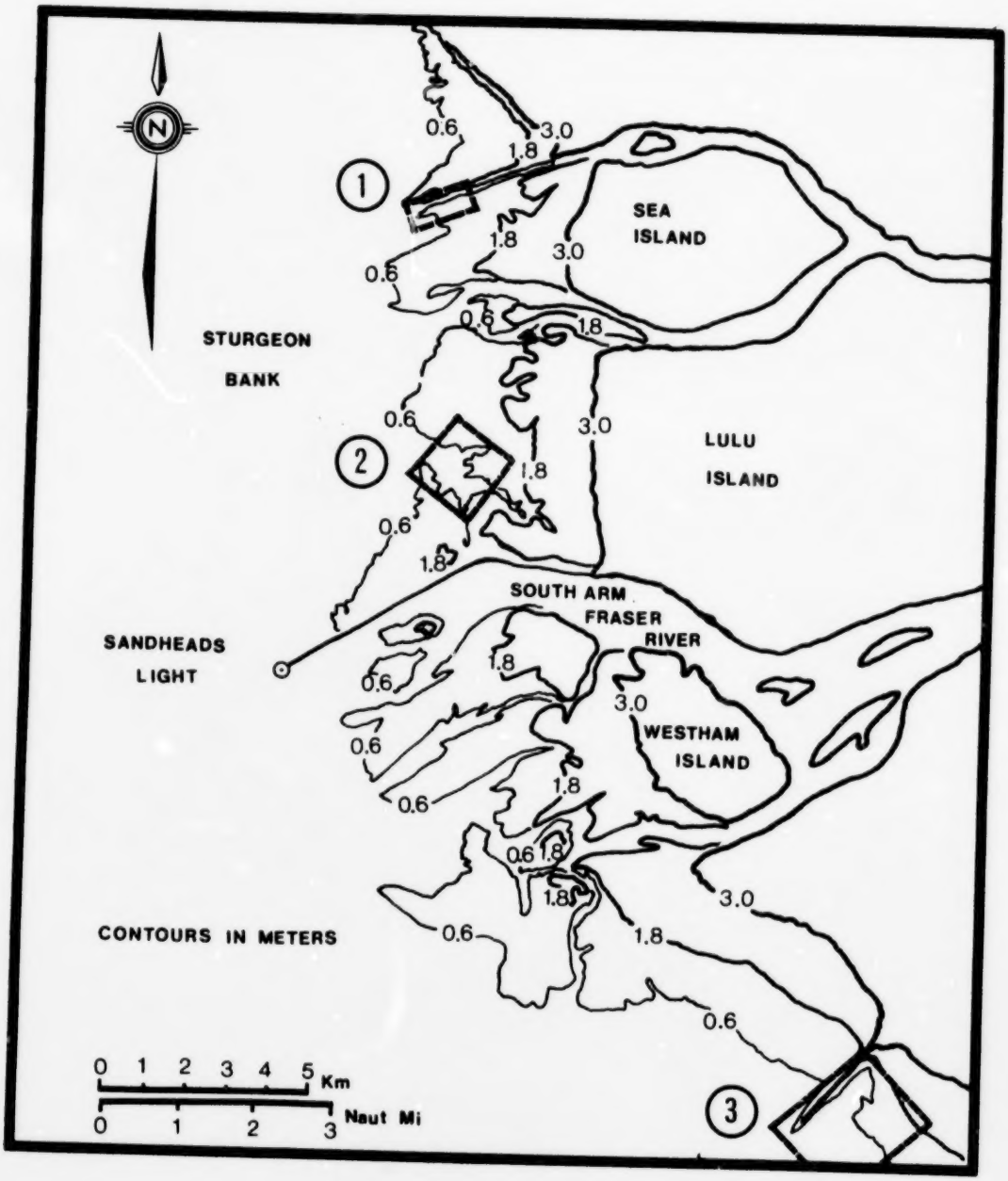
N
0.6
3.0
1.8
1
SEA
ISLAND
1.8
3.0
0.6
0.6
1.8
STURGEON
BANK
0.6
3.0
LULU
ISLAND
2
1.8
0.6
1.8
SOUTH ARM
FRASER
RIVER
SANDHEADS
LIGHT
0.6
1.8
3.0
WESTHAM
ISLAND
0.6
0.6
1.8
0.6
1.8
1.8
3.0
CONTOURS IN METERS
0.6
1.8
0.6
0 1 2 3 4 5 Km
0 1 2 3 Naut Mi
3

Fig. 1.

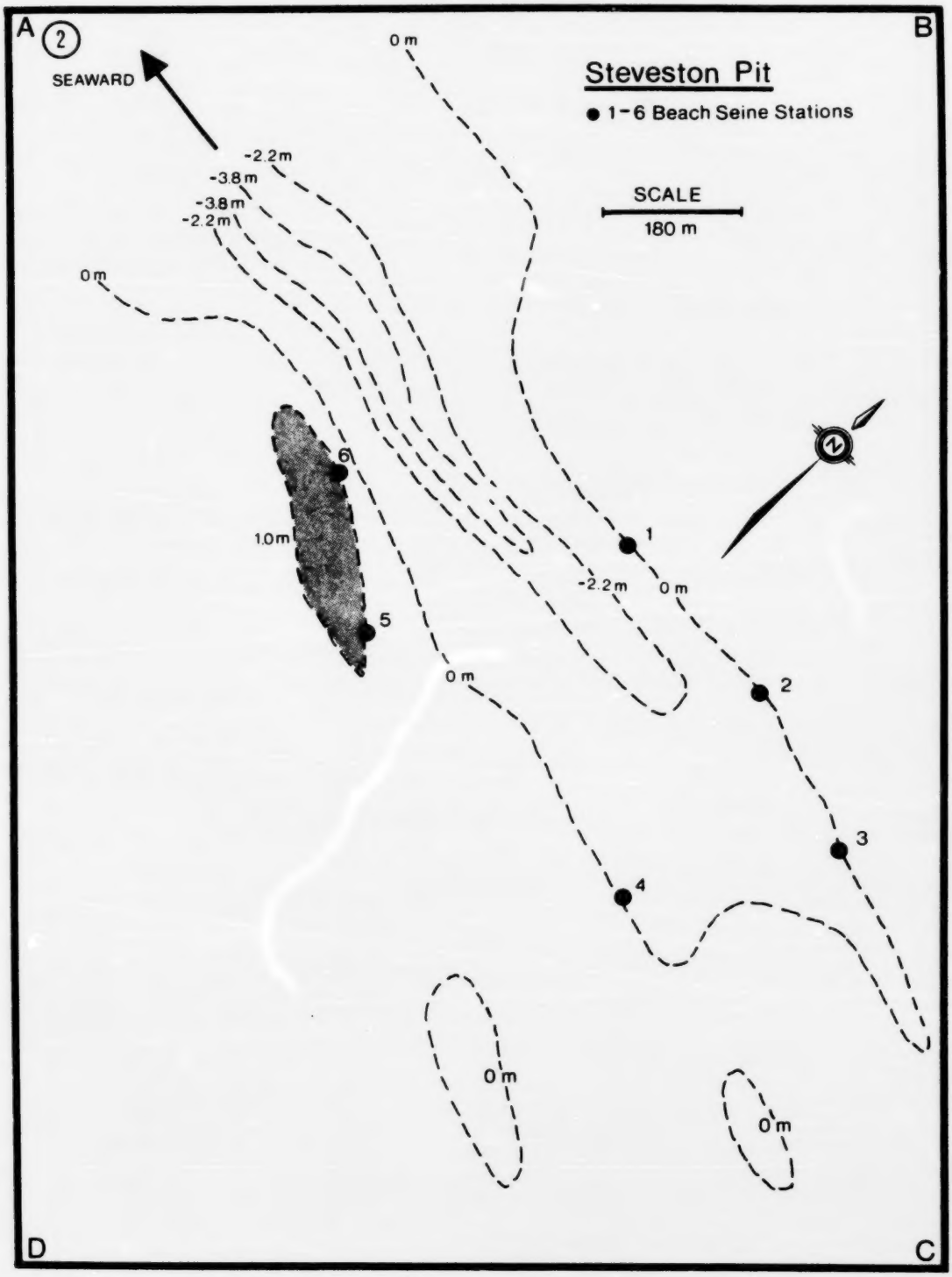
A
2
B
SEAWARD
0 m
Steveston Pit
● 1-6 Beach Seine Stations
SCALE
180 m
-2.2m
-3.8m
-3.8m
-2.2m
0 m
6
1.0m
5
1
-2.2m
0 m
0 m
2
3
4
0 m
0 m
D
C

Fig. 2.

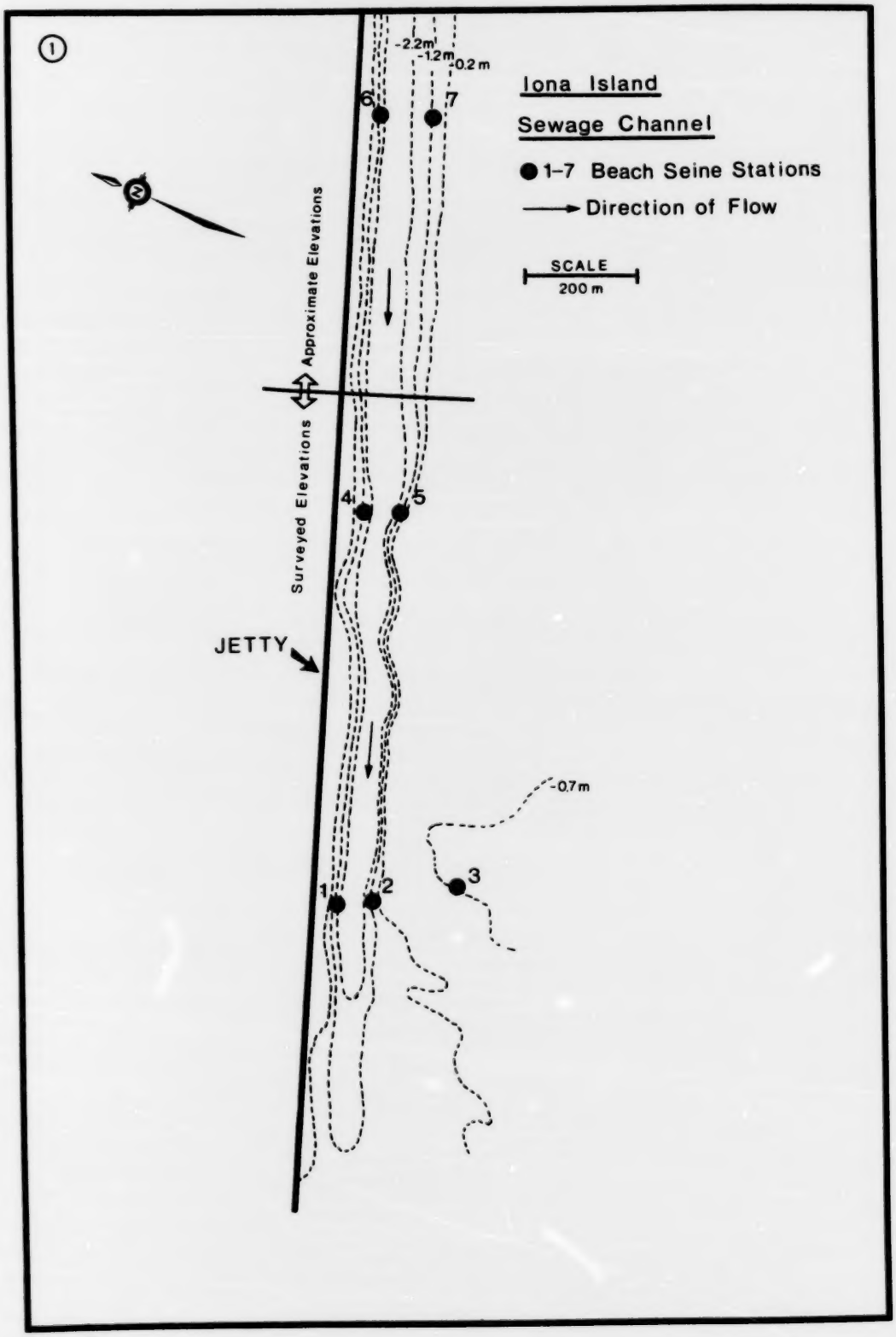
-2.2m
-1.2m
-0.2 m
Iona Island
Sewage Channel
1-7 Beach Seine Stations
Direction of Flow
SCALE
200 m
Approximate Elevations
Surveyed Elevations
JETTY
-0.7m
1
2
3
4
5
6
7

Fig. 3.

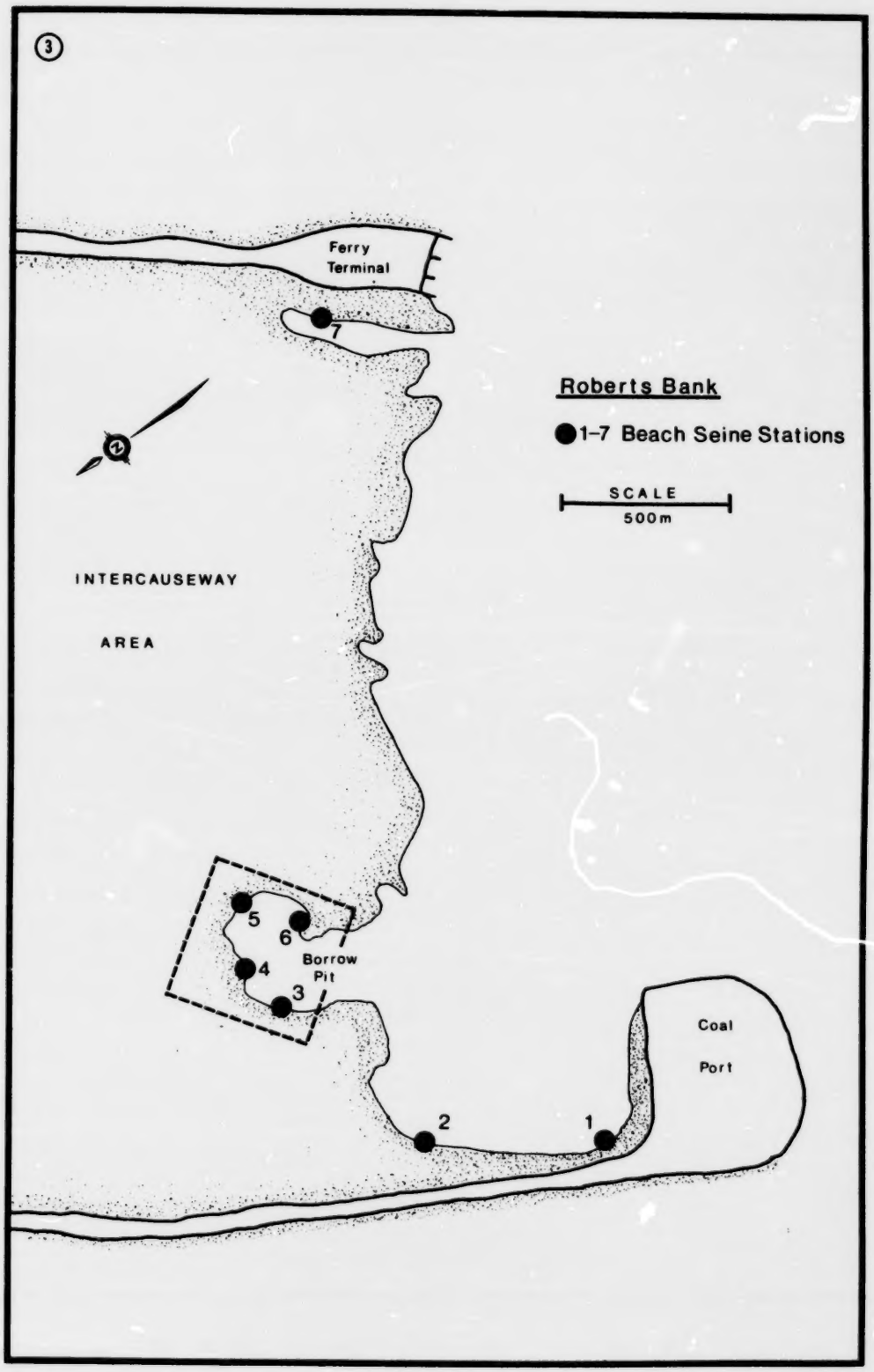
3
Ferry
Terminal
7
Roberts Bank
1–7 Beach Seine Stations
SCALE
500m
INTERCAUSEWAY
AREA
5
6
4
3
Borrow
Pit
Coal
Port
2
1

Fig. 4.

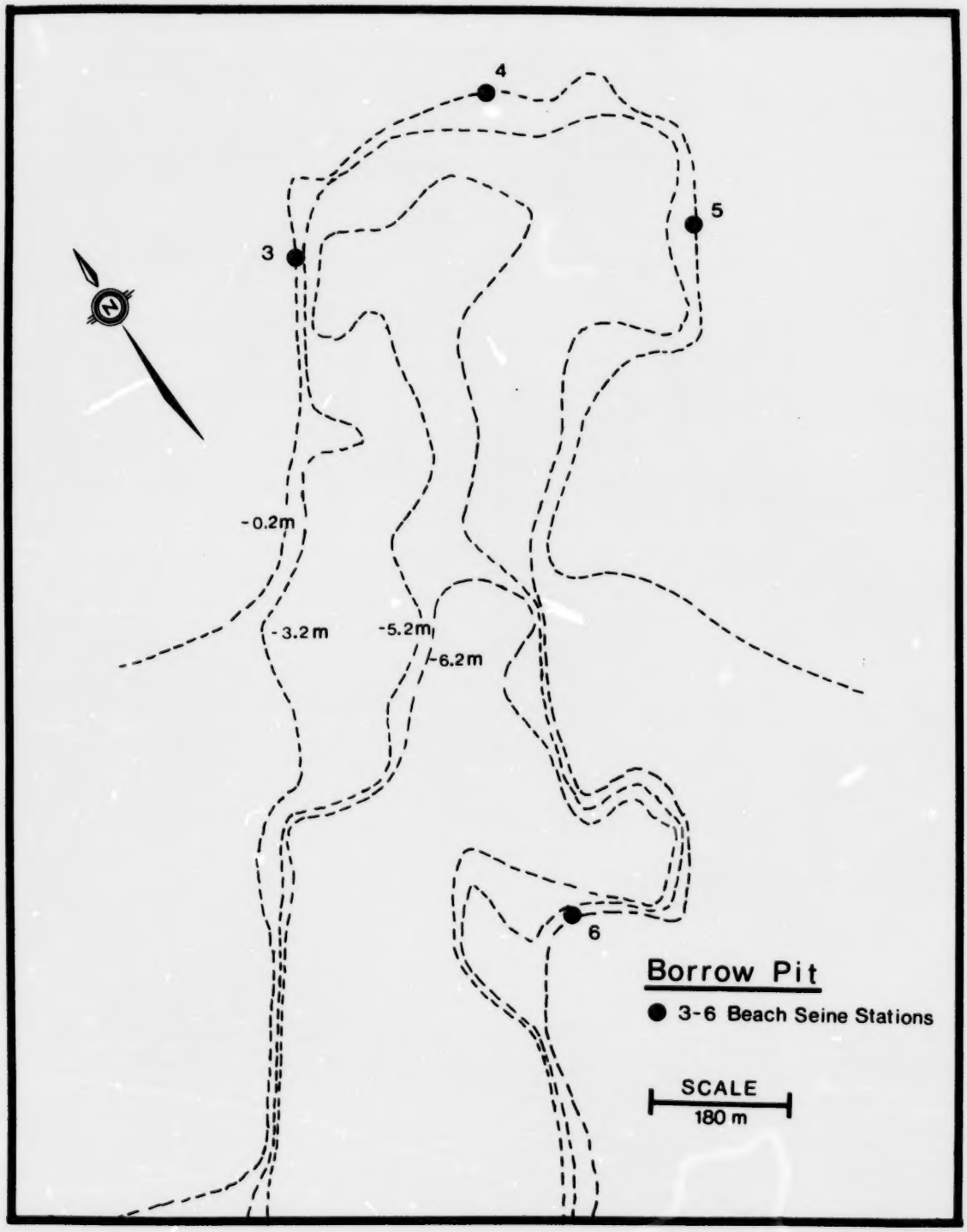
4
5
3
N
-0.2m
-3.2m
-5.2m
-6.2m
6
Borrow Pit
3-6 Beach Seine Stations
SCALE
180 m

Fig. 5.